COTTON

AUGUST, SERVING THE 1938

Textile Industries

12 Years Ahead

Back in 1925, the George S. May organization began its engineering history by developing scientific applications for Management to use on Wages and Hours in Industry.

Out of over 2200 jobs handled during this time, 1800 have involved Wages and Hours along with other problems.

This wealth of experience makes the George S. May Company the logical choice to handle your problem under the new Federal Fair Labor Standards Act of 1938.

Address our nearest office for information on how we would assist your company in conforming to the Wages and Hours Bill.

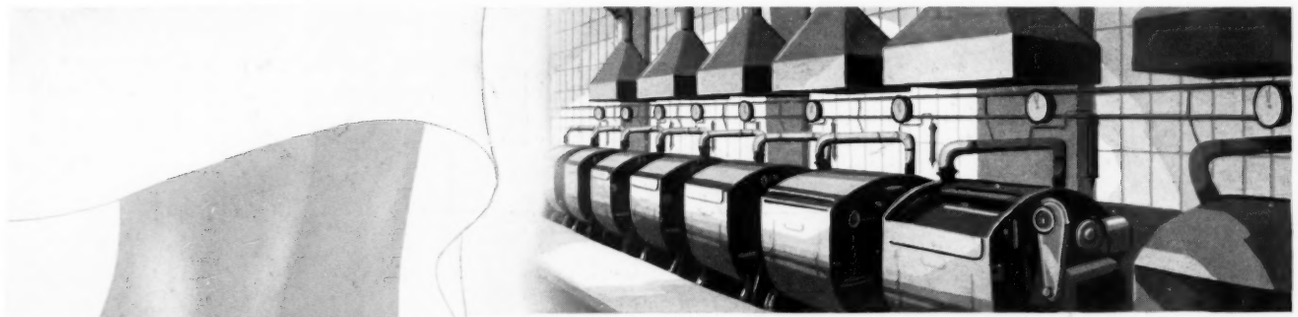
ENGINEERS

GEORGE S. MAY COMPANY

CHICAGO 2600 North Shore Ave. | SEATTLE 710 Second Avenue | ATLANTA 134 Peachtree St. | NEW YORK 122 East 42nd St.

CANADA: George S. May, Ltd., 320 Bay St., Toronto

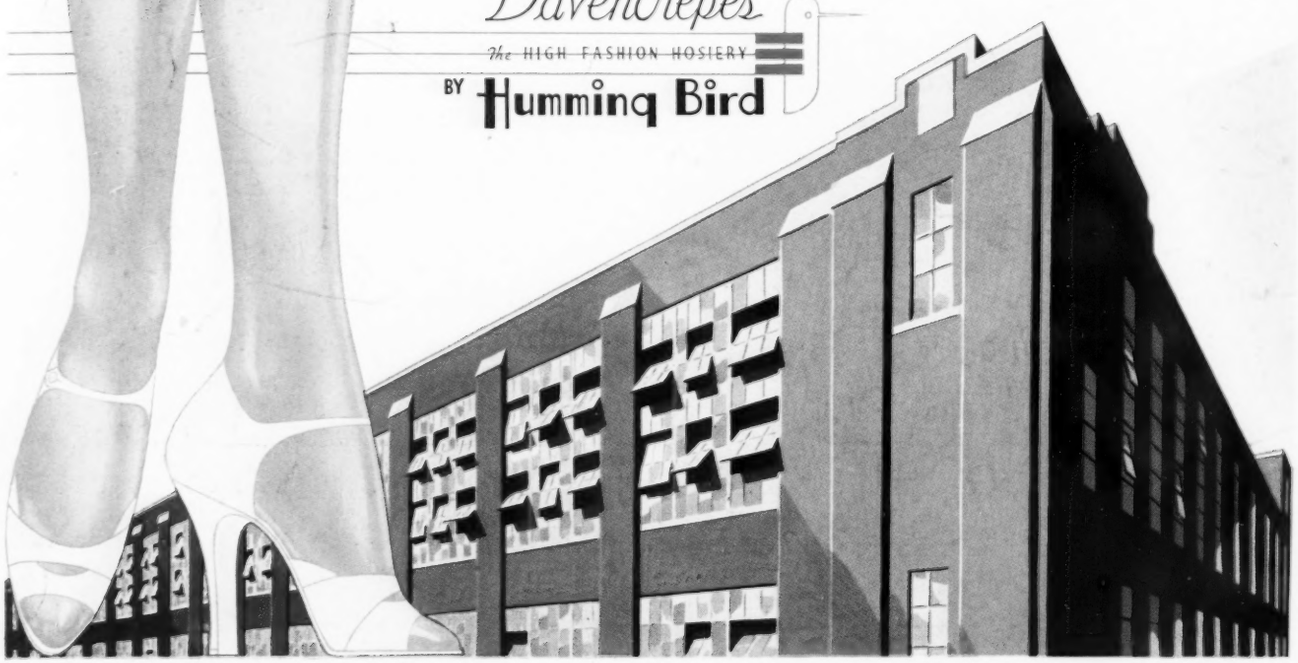
OFFICES IN 15 OTHER PRINCIPAL CITIES



HUMMING BIRD, one of the youngest national brands is also one of the major mills of the nation, with a record of rapid and consistent growth. Much of this may be traced to the mill itself, which has come to be a model for the industry to follow, because it produces straight through from raw silk to finish, and because there you will always find employed every proven development in equipment or method.

It has been our privilege, as growth has called for added plant capacity, to serve as architects and engineers to the Davenport Hosiery Mills of Chattanooga.

Davencrepes
the HIGH FASHION HOSIERY
BY **Humming Bird**



ROBERT AND COMPANY
INCORPORATED
LAWRENCE WOOD ROBERT, JR., *President*
Architects and Engineers
ATLANTA, GA.

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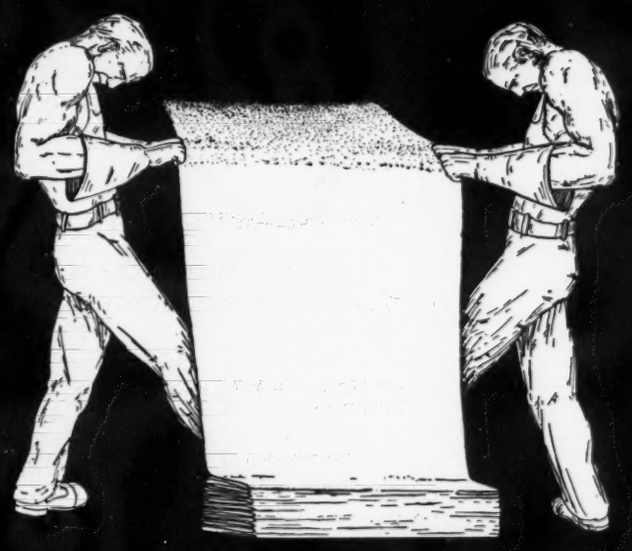
To Hold the Cloth



at Full Width
With
the Smooth Touch
of the
Gloved Hand
is the Job

of the Modern Loom Temple

The Contracting Pull of the Cloth must be Overcome by a vise-like Grip in your Loom Temple

This Grip may be Softly Gloved for one fabric and Boldly Spiked for another ❖ ❖ Both Must Hold ❖ ❖ Neither Must Mark the Cloth

Our Koroseal Rolls for Rayon are Different from Others and Better

We Can Furnish Toothed Rolls with Size and Spacing of Teeth Specially Adapted to the Fabric you are Weaving

But Rolls are not the Whole Temple Story

More Contact or Less Contact between Cloth and Roll is a problem on many fabrics ❖ ❖ Our Adjustable Tops give a tremendous advantage in Regulating Contact with the Roll

Temple Thread Cutters must do a Clean Job in trimming hanging ends

There is a Draper-Dutcher Temple for Every Weave — Woolen and Worsted — Cotton and Rayon ❖ ❖ One of them Will Fit your Fabric

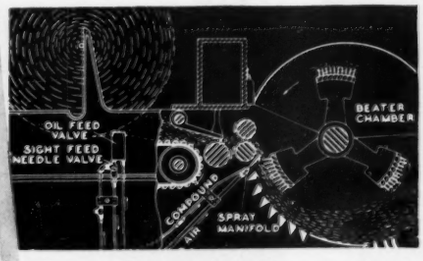
DRAPER CORPORATION

Atlanta Georgia Hopedale Massachusetts Spartanburg S C

USING IT 5 YEARS...

TEXSPRAY OK

Row of one-process pickers and vacuum tank with drum of Texaco Texspray Compound. This mill reports outstanding improvement in working conditions due to the reduction of fly.



THIS DIAGRAM in the 16-page Texspray booklet shows in colors just how the Texspray system works . . . and why it makes such outstanding improvements in working conditions and in the yarn produced. Every cotton man should have this booklet, free for the asking.

The Gen. Mgr. and Supts. of 5 Big Mills agree.

Operating nearly 200,000 spindles and more than 6,000 looms, this chain knows from experience that the Texaco Texspray System of Cotton Conditioning *pays* . . . in these things alone:

1. Elimination of dust and invisible waste
2. Elimination of static

Using Texaco Texspray Compound to condition cut rayon, one of these mills reports better carding and drawing, fewer split laps . . . and static reduced to practically nothing.

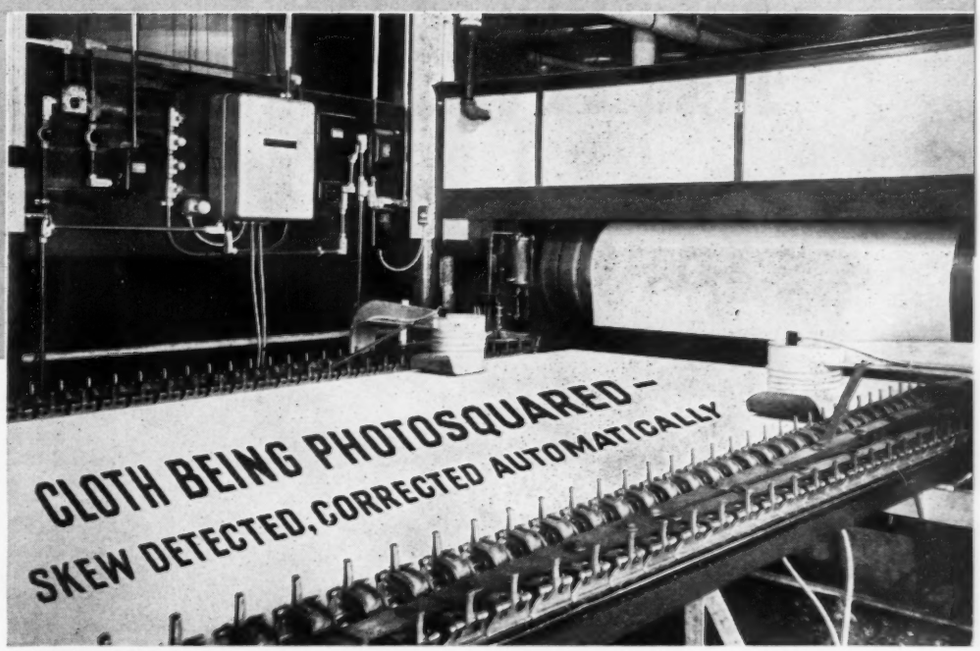
First step toward a better understanding of the Texaco Texspray System is to read the Texspray booklet, sent free for the asking. Texspray System is available in textile manufacturing centers in the U. S. A.

The Texas Company, 135 E. 42nd Street, N. Y. C.

TEXACO *Texspray* SYSTEM OF COTTON CONDITIONING

Now PHOTOSQUARED

Cloth Trued Photoelectrically Comes to the Aid of Finishers Converters Housewives



HERE IT IS! Cloth being Photosquared at the Danvers Bleachery. At left and right of the cloth are the "electric eye" scanning heads, automatically alert to any deviation in the right angle of the weft. Control panel for this system in the background

AFTER a year of actual textile-mill tests, General Electric announces equipment that *automatically* controls weft straightening. This equipment is applicable to a wide range of cloth, from light marquisettes to heavy sheeting. Attached to a Winsor & Jerauld straightener, it makes possible *instant* correction of skew, eliminating the hit-or-miss adjustment of ordinary methods. Photosquared is the term devised by General Electric to designate cloth straightened with General Electric photoelectric weft-straightening control. This automatic control is manufactured by General Electric and sold by Winsor & Jerauld.

HOW PHOTOSQUARING HELPS

FINISHERS

1. Less spoilage, because of absence of skew.
2. Faster production, less stopping for inspection.
3. Customers prefer straight cloth.
4. Makes possible better finishing guarantees.
5. Cloth labeled Photosquared will sell better.

CONVERTERS

1. Straight cloth can be cut square with less waste.
2. Less allowance need be made for trimming.
3. Print-goods pieces can be lined up with uniformity.
4. Goods labeled Photosquared will be in greater demand by retailers.

HOUSEWIVES

1. Drapes, curtains, and similar articles can be more quickly cut out and matched.
2. Such garments as print dresses will retain their shape and will press better because of the absence of skew in the cloth.
3. The label Photosquared will identify goods that have these advantages.

A MARK OF DISTINCTION

Use of this design as shown is available to every manufacturer straightening cloth with the G-E photoelectric weft-straightening control.

General Electric, Dept. 6B-323
Schenectady, N. Y.

I am interested in receiving further information on photoelectric weft-straightening control equipment.

Name.....

Company.....

Street.....

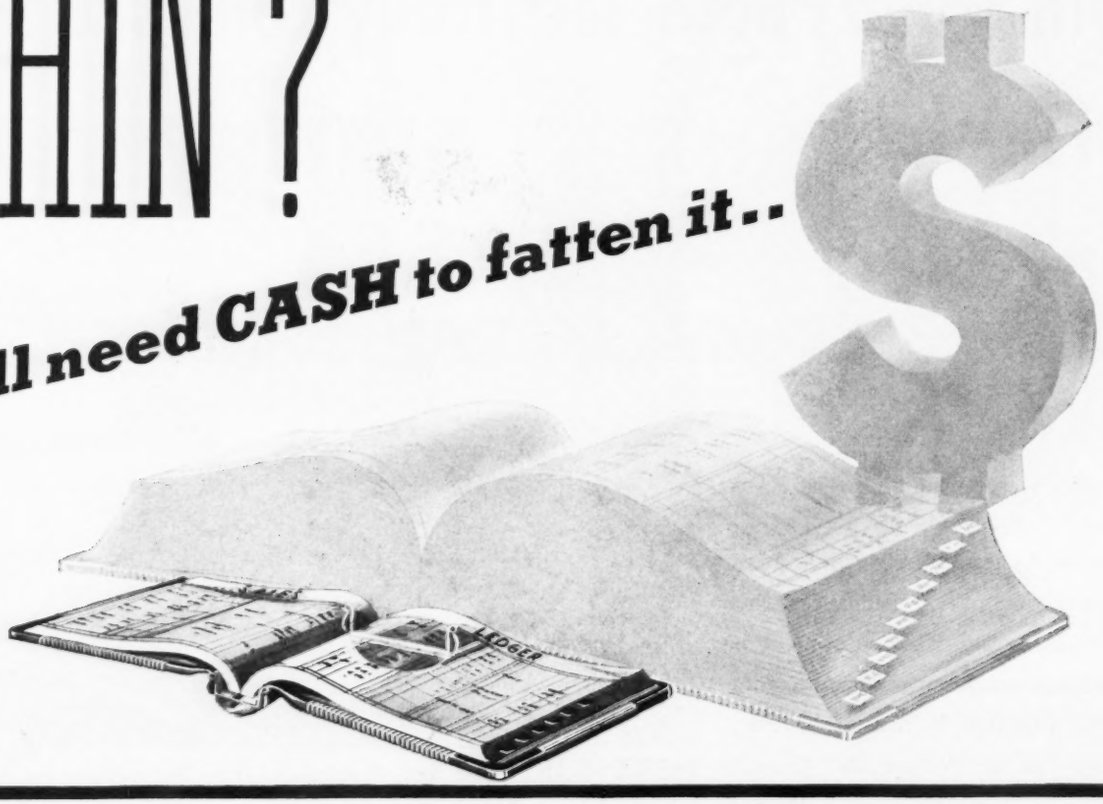
City..... *State*.....

GENERAL ELECTRIC

011-378

THIN?

you'll need CASH to fatten it..



HERE'S a *new* problem for business. As the pace quickens, how fast can readjustments be made to meet a rising tide of buying?

Money is the crux of the problem. It takes money to finance sales. Materials have to be bought—increased payrolls met—an increasing number of customers have to be given credit.

The concern that lacks adequate and flexible financial resources to meet this situation must stand aside. Business won't wait. Many competitors are eager and able to grab off the profitable orders.

Make sure you'll be able to finance new business—to materially increase your sales—to build up the profit figure in your statement.

There is a way to finance sales expansion without incurring new loans, without change of your capital structure, and without any outside encroachment on your management of your business. It's our Open Account financing plan. It is sound, simple and economical.

Any or *all* sales you make, can be converted into cash in your bank *immediately upon shipment.*

There will be no delay—no notification to your customers—no change in your routine of billing and collecting. We pay you on day of shipment.

You will be surprised at the low cost of this financing service . . . impressed by the ease with which you can start it and stop it—by the absence of contractual restrictions. It is the type of financing that most adequately meets the requirements of rapidly changing business conditions.

COMMERCIAL CREDIT COMPANY

Capital and Surplus Over $64,000,000

BALTIMORE

NEW YORK CHICAGO PORTLAND, ORE. SAN FRANCISCO

★ ★ ★

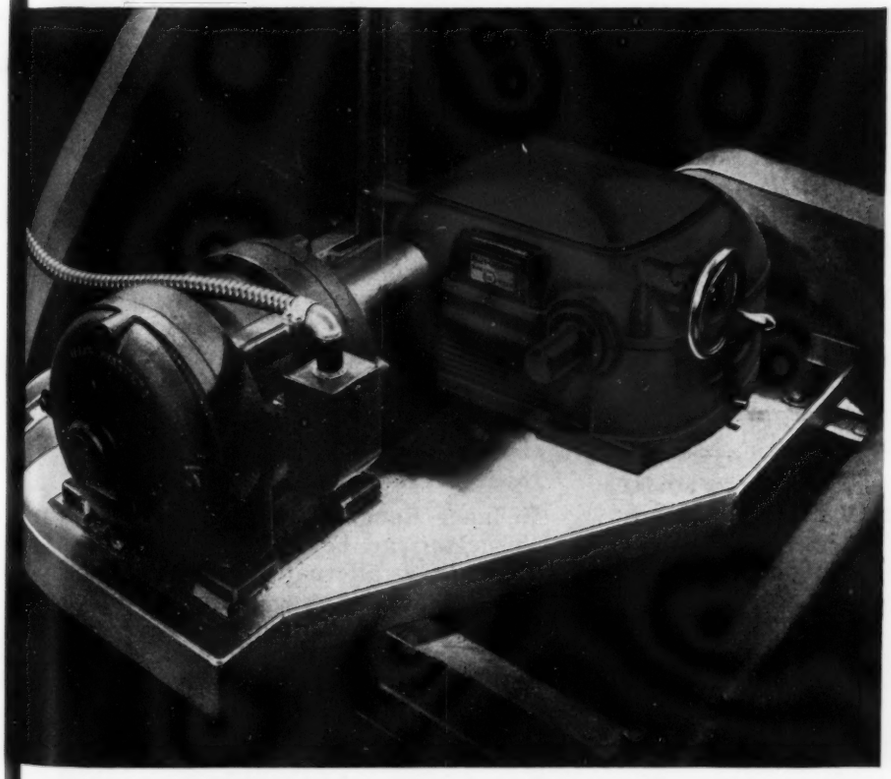
GET THE FACTS

Why not let us give you the complete story and show you how it can be fitted to your specific needs? Write for our booklet "CAPITAL AT WORK". No obligation.

MAKE YOUR SPINNING FRAMES BIGGER...

MONEY MAKERS

Here's How the Allis-Chalmers Vari-Pitch Speed Changer Makes Your Spinning Frames Produce More . . . Lowers Production Costs. It's 95% Efficient . . . The Most Efficient Speed Changer on the Market Today! Read the Facts! . . .



Cutting costs on a conveyor line is this Vari-Pitch Speed Changer direct connected to an Allis-Chalmers 1150 rpm "Lo-Maintenance" Motor.

Flexible production, uniform results, waste cut to the bone—to you that means greater sales output . . . more profits! To get that you've got to gear your production equipment to modern standards . . . make your equipment operate in a higher speed range than ever before at less cost to you!

The new way . . . the most efficient way is to install a compact Allis-Chalmers Vari-Pitch Speed Changer. 95% efficient . . . built to run your looms at exactly the speed production demands . . . it can be coupled to a standard, low cost, high speed motor to make your production flexible without adding expensive or bulky equipment.

No Springs, No Steps, No Guesswork!

There are no springs to get out of order, no steps that make you take time out for adjustment, no guesswork. With the Vari-Pitch Speed Changer, you can make smooth speed changes—that remain constant—without stopping production.

Once you've installed a Vari-Pitch Speed Changer, you'll agree that it will revolutionize speed changing practice just as the Texrope Drive revolutionized transmission practice.

The Vari-Pitch Speed Changer is a product of Allis-Chalmers, originators of the Texrope Drive and Vari-Pitch Sheave. It is available in sizes 1 to 33 hp., ratios up to 3¾ to 1, maximum output speed, 3500 rpm. . . . Get the facts! Send for Bulletin 1266 and find out for yourself how you can cut production costs and increase sales output with the new Allis-Chalmers Vari-Pitch Speed Changer.

Vari-Pitch Speed Changers • Texrope V-Belts • Duro-Brace Texsteel Sheaves • Vari-Pitch Sheaves • Standard Cast Iron Sheaves • Adjustable Pitch Diameter Texsteel Sheaves • 2-3-4 Combination Sheaves • Straitline Automatic Motor Bases • Oil Field Drilling Rigs

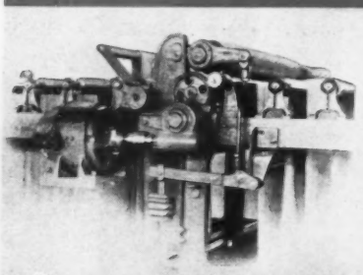
Belts by Goodrich

TEXROPE DIVISION

ALLIS-CHALMERS

MILWAUKEE · WISCONSIN

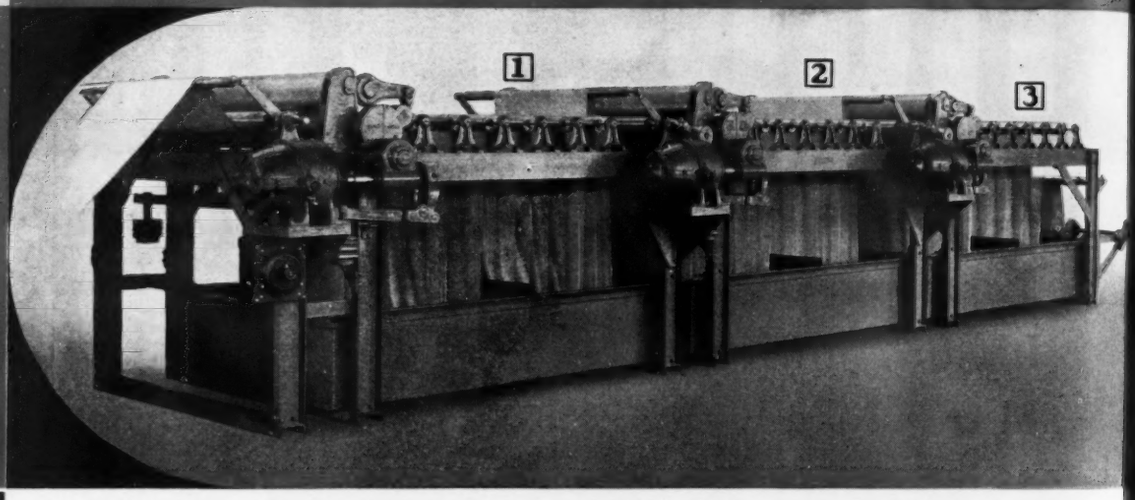
Motor-Drive is MORE THAN power on this washer



It's a definite aid to good quality, uniformity and low costs. . . .

Illustration Above

Close-up of motor mounting. The adjustable-speed motor serves a double purpose. Its first job is to supply power, but it also provides within itself a simple and efficient method of speed changing.



Van Vlaanderen 3-compartment Print Washer or Open Soaper with Reliance Range Drive. Motors are d-c. 1 1-2 hp. 650-1950 rpm. with drip-proof covers over top openings and screen covers over lower portion. Rheostat under motor at entering end controls speeds of all motors simultaneously.

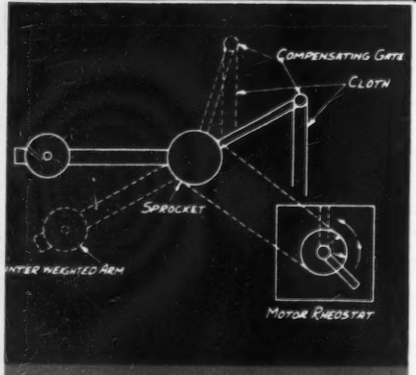


Illustration Above

Diagram of compensating gate. The slack between sections 1 and 2 allows the counter-weighted arm to rise to the position indicated by the dotted line. This operates the motor field rheostat through the sprocket and chain and speeds up the motor operating the nip rolls of section 2.

Write for Book No. 1175, titled "Profitable Ways to Use Adjustable-speed Motor-drive". It shows in detail why motor-drive is more than power.

IN designing this three compartment print washer or open soaper, the makers took full advantage of adjustable-speed motor-drive. Power is applied close to the point where it is needed, with simple driving parts. This saves space and helps to keep down maintenance costs.

The three motors operate in tandem. The speeds of all motors can be adjusted over a 3:1 range at the same time through a single rheostat. A compensating rheostat, automatically operated, is installed in the field circuit of each motor to insure uniform cloth tension in all sections. These rheostats compensate for shrinkage in separate compartments and for variations in the diameter of nip rolls.

Push buttons for starting and stopping are at each end of the washer. Pressing the "stop" button brings the motors to a standstill quickly through graduated dynamic braking.

Reliance Range Drives for work of this class can be supplied for both direct and alternating-current circuits. Capable engineers in our branch offices are prepared to show how they can be profitably used for your processes.

Reliance Electric & Engineering Company

1088 Ivanhoe Road — Cleveland, Ohio

Branches: Birmingham, Boston, Buffalo, Chicago, Cincinnati, Detroit, Greenville (S. C.), New York, Philadelphia, Pittsburgh, Syracuse (N. Y.). Representatives in other principal cities.

RELIANCE A-C D-C MOTORS

To You Who Are Purchasing *New Looms*

In the First Place

It is an incontrovertible fact that today there are over a quarter of a million Hyatt Roller Bearings satisfactorily operating in Rayon, Silk, Cotton, Woolen, Plush and Carpet Looms.

Over three hundred mills will attest to the fact that Hyatt Roller Bearings enable them to operate their looms more efficiently. They like the bearings, paid an extra price to get them and would do so again.

In the Second Place

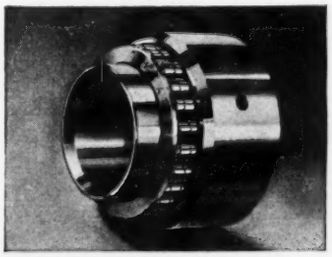
Accurately conducted tests made in the South and in the North prove conclusively that when Hyatt Roller Bearings are applied to crankshaft, camshafts, rockershafts, takeups, and dobby drives, looms will operate more smoothly, power consumption is reduced, production is increased, grease or oil spattering and most of the cost of lubrication eliminated, supply costs are cut and higher quality cloth obtained. Users of Hyatt equipped looms will back up these statements.

In the Third Place

Loom builders are equipped with patterns and tools to apply Hyatt Roller Bearings and will gladly do so. However, it is necessary for you to specify these better bearings by name in order to get them in Rayon and Cotton Looms. You will still be using the looms you buy now ten years hence. Ten years from now all machinery will be still more efficient and the looms you buy today will be competing with the more efficient looms of the next decade.

Therefore, doesn't it seem good hard headed business sense to buy the most efficient machinery and devices available today to offset as much as possible near future and future improvements. Your profits are at stake. Ask us for further facts and they will gladly be supplied.

Make Your Looms Truly Modern — Specify That They Be Equipped With



Precision ground Hyatts are far more efficient than ordinary cast iron plain bearings which were obsoleted in most machinery years ago.

HYATT *Roller Bearings*

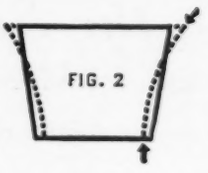
HYATT BEARINGS DIVISION - GENERAL MOTORS CORPORATION - HARRISON, NEW JERSEY

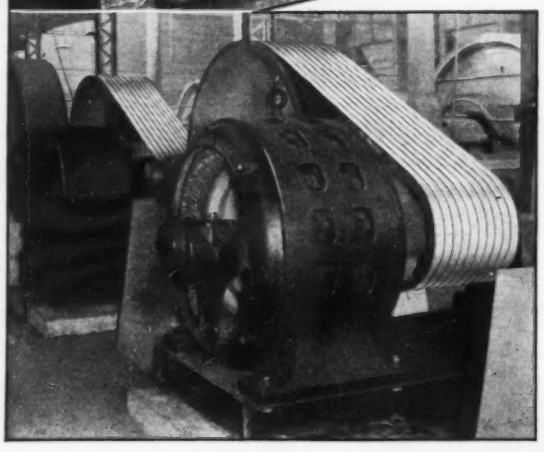
Feel THE Sidewalls of ANY V-BELT *AS IT BENDS*

Prove for Yourself WHY the Concave Side SAVES MONEY

Feel the side-walls of *any* V-belt as it bends. You will feel its top narrow under tension, its bottom widen under compression. You will see that a *straight-sided* V-belt *must* assume in its sheave-groove the shape shown in figure 1, below. Note the out-bulge of the sides!

WHAT HAPPENS WHEN A V-BELT **BENDS**





Now try the same test with a Gates Vulco Rope. You will find that the *same shape change* merely *straightens* the precisely engineered concave side (see figure 2). There is no side-bulge. This insures uniform side-wall wear; *longer* life! Moreover, the full side-wall grip on the pulley naturally carries heavier loads without slipping—a saving in belts and also a saving in *power!*

The Gates Vulco Rope is the only V-Belt built with the patented concave side.

Engineering Offices and Stocks in All Large Industrial Centers

THE GATES RUBBER COMPANY

Factory Branches

Terminal Building
Hoboken, N. J.

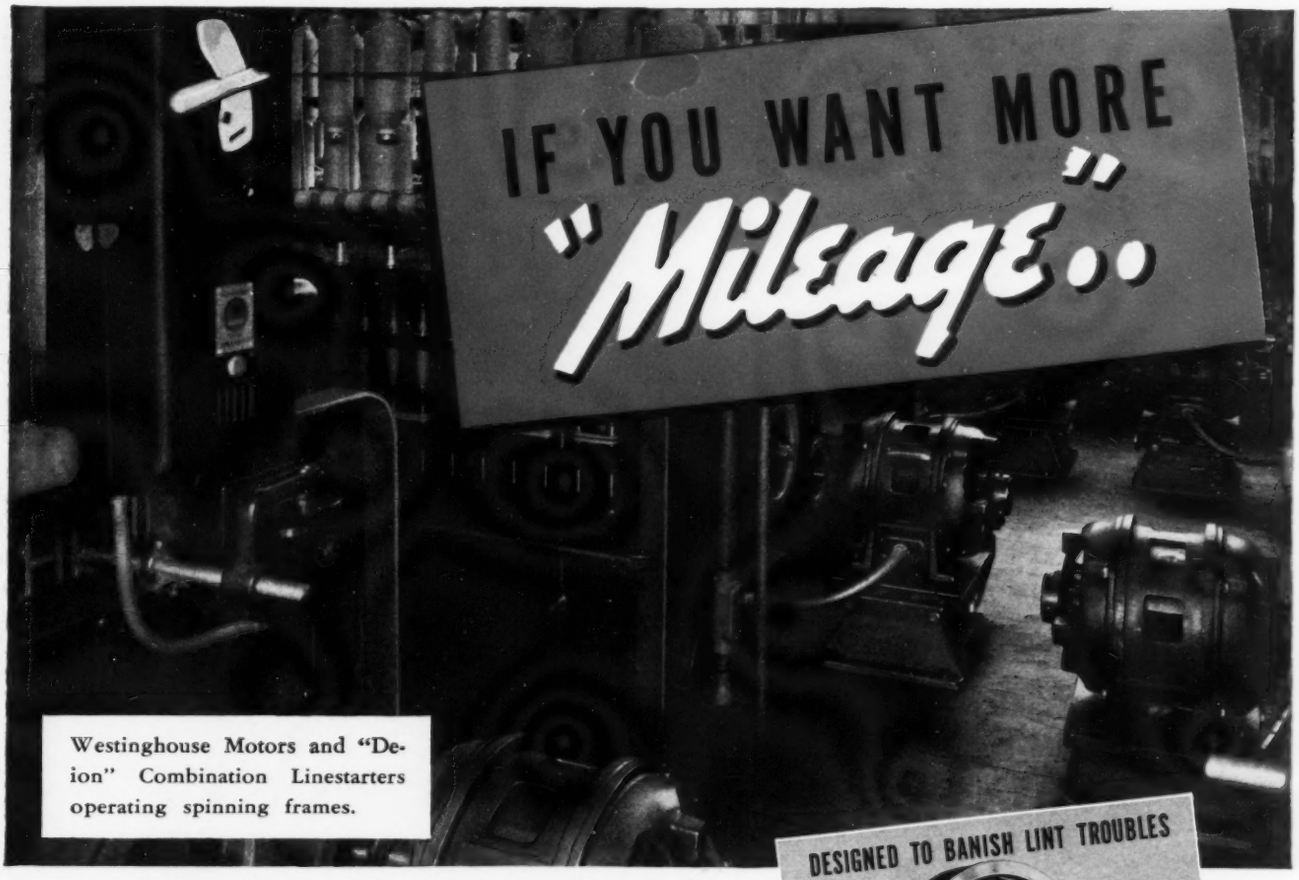
1524 So. Western Ave.
Chicago

741 Warehouse St.
Los Angeles

2213 Griffin Street, Dallas

999 South Broadway, Denver

GATES VULCO ROPE DRIVES



Westinghouse Motors and "De-ion" Combination Linestarters operating spinning frames.

SPECIFY LINT-FREE MOTORS BY WESTINGHOUSE

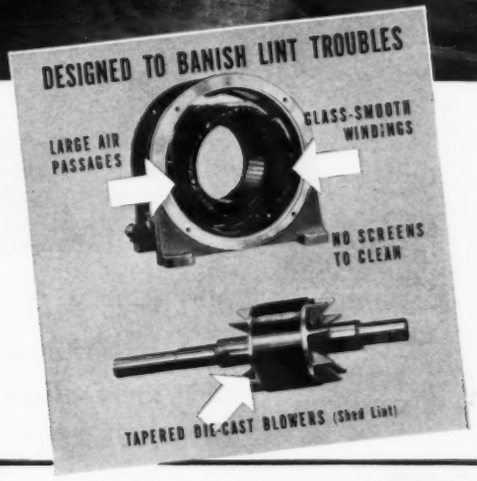
Lint is objectionable on all mill machinery, but mill operators have found the way to trouble-free service with Westinghouse Lint-Free Motors. These motors have four important features:

1. Specially shaped rotor vanes circulate air through the motor at proper velocity to remove lint.
2. Glass-smooth windings prevent lint from clinging.
3. All air passages are extra large.
4. There are no screens to require cleaning.

Find out about these and other time-proved advantages of Westinghouse textile machinery drives. Call or write your nearest Westinghouse Office or Industrial Agent.

Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

J-20618



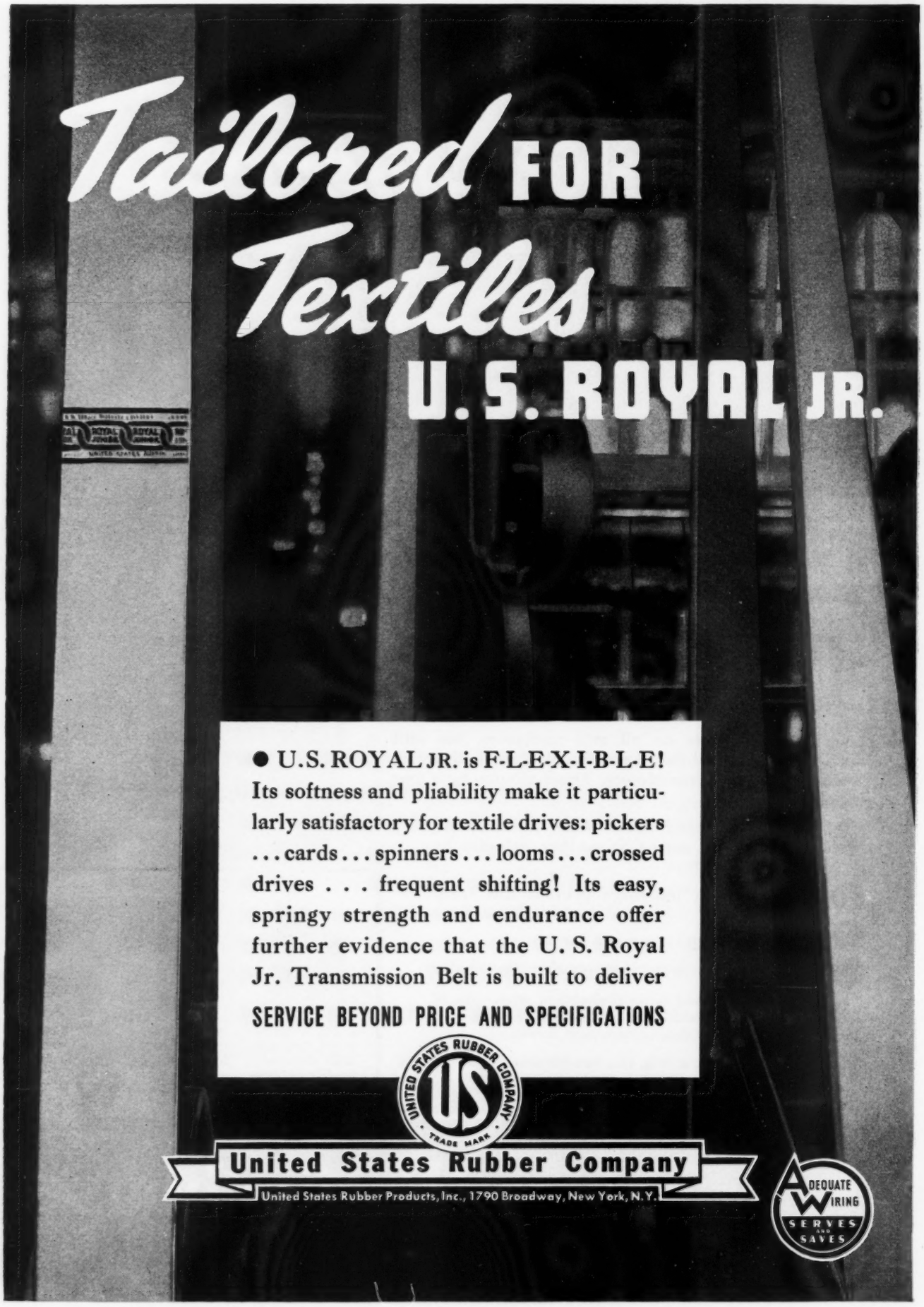
Loom Motors—extra strength, high efficiency, readily accessible oilers, long life bearings.

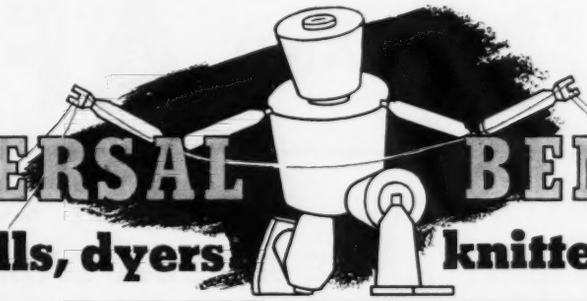
WK-18 Starter—Guards loom motor against overload damage.

"De-ion" Combination Linestarter.

FROM POWER LINE TO DRIVEN MACHINE YOU ARE ALWAYS SURE WITH **Westinghouse**

MOTORS • CONTROL • CIRCUIT PROTECTIVE EQUIPMENT

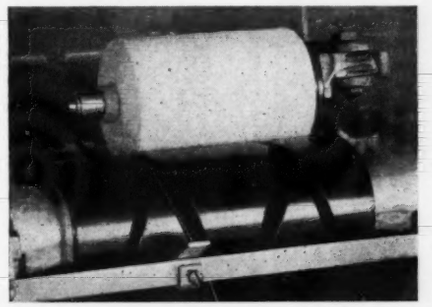

Tailored FOR Textiles
U. S. ROYAL JR.
● U.S. ROYAL JR. is F-L-E-X-I-B-L-E! Its softness and pliability make it particularly satisfactory for textile drives: pickers . . . cards . . . spinners . . . looms . . . crossed drives . . . frequent shifting! Its easy, springy strength and endurance offer further evidence that the U. S. Royal Jr. Transmission Belt is built to deliver
SERVICE BEYOND PRICE AND SPECIFICATIONS
UNITED STATES RUBBER COMPANY
US
TRADE MARK
United States Rubber Company
United States Rubber Products, Inc., 1790 Broadway, New York, N.Y.
ADEQUATE WIRING SERVES AND SAVES



UNIVERSAL BENEFITS

for yarn mills, dyers knitters and weavers

Short Traverse Packages



The patented rotating traverse on the Roto-Coner makes it possible to wind packages of different lengths without change of traverse roll. A special short traverse attachment is used, and short packages can be wound at the same speed as full-length packages. Short packages on reciprocating-guide winders must be wound at low speeds, and it is also necessary to invest in extra cams for each traverse length.

The finger on the bar shown in the illustration is set to stop the yarn at any crossing point of the grooves in the rotating traverse. The same standard-length traverse is used for short traverse packages.

This attachment is usually used for winding fine counts of yarn, either for shipment on cones or tubes or for dyeing or twisting. See Bulletin 144.

Free Delivery from Roto-Cones on Knitting Machines

Roto-Cones are built with the standard open wind which has been associated with knitting cones for many years.

The taper of Roto-Cones — which knitters say are responsible for an improvement in knitting — is due to the acceleration of the groove in the rotating traverse on the Roto-Coner. The cone builds up faster at the base end, with the result that when feeding the knitting machine the yarn will deliver freely from any diameter without dragging over the nose or surface of the cone.

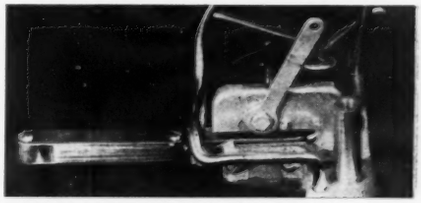
Press-offs are also reduced by the absence of roll-cut yarn — for yarn wound on the rotating-traverse winder is not cut or chafed as on winders having slip drums, metal driving rolls and reciprocating guides.

Savings in Random Dyeing — Improved Dyeing Quality

Savings in the cost of random dyeing have been made possible for a number of mills as the result of their Roto-Coner installations. Because of the much higher winding speed, fewer winding spindles are required — thus also reducing the number of random dye attachments needed.

Dyeing packages wound on the Roto-Coner have produced excellent results. Quick reversal of the yarn at the ends of the traverse prevents the formation of hard ends which interfere with even penetration of the dye. Special positioning of the package on the rotating traverse relieves pressure from the inside layers as the package increases in size, and this contributes to the uniform density which dyers say makes a perfect package.

New Precision Slub Catcher



Accurate adjustment of slub catchers on the Roto-Coner is only a matter of a few seconds. One movement of a special wrench loosens the locking screw and lifts the movable blade; with the thickness gauge inserted between the blades, the wrench is released, and a spring forces the movable blade to correct setting. The wrench then tightens the locking screw. This setting is foolproof, because any tampering automatically closes the two blades.

Have you seen Bulletin 244 — which discusses the Universal System of High Speed Coning & Warping? Now that the Roto-Coner has been made part of this system, there are new opportunities for mills now doing slow speed spooling and warping to lower their cost of manufacturing. In three out of four of such mills, the greatest net return on investment will come from the Universal System.

Short Traverse Packages *which may be wound on the Roto-Coner using the short traverse attachment*

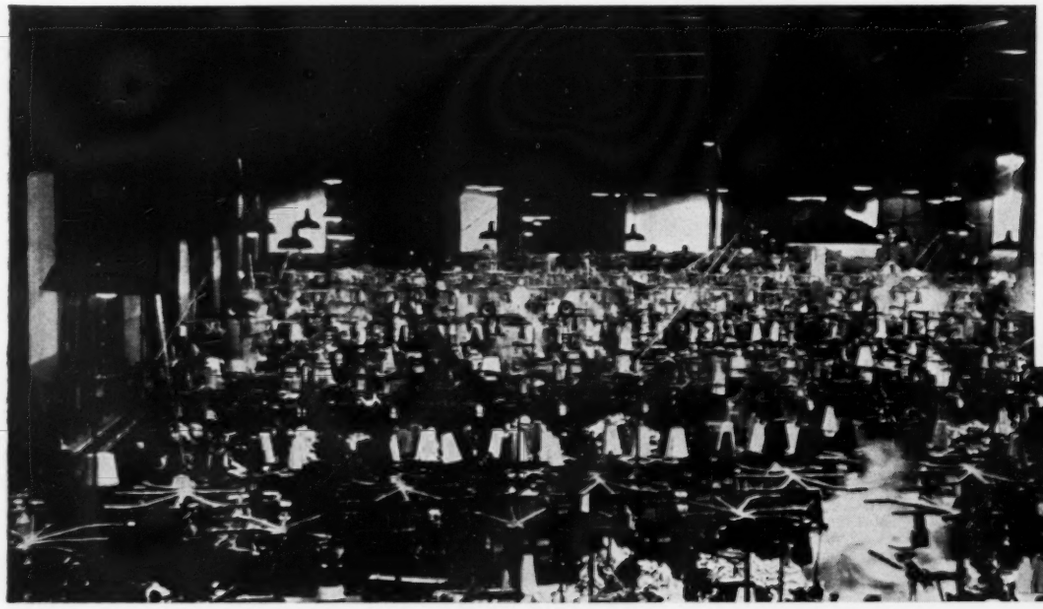
ROTATING TRAVERSE 3-INCH DIAMETER	FULL TRAVERSE	PACKAGE LENGTH IN INCHES BY STOPPING OFF: LEFT END OF PACKAGE					RIGHT END OF PACKAGE				
2 turns uniform (special) — soft dyeing packages	5¾	4¼	2¾	1¼			4¼	2¾	1¼		
3 turns uniform — tubes and dyeing packages*	5⅞	4⅞	3⅞	3	1⅞	15/16	4⅞	3⅞	3	1⅞	15/16
3 turn ⅝ accelerated-warping cones	6	4¾	3⅝	2 9/16	1⅝	11/16	5 3/16	4¼	3¼	2¼	⅞
2½ turns full accelerated-knitting cones	5¾	4¼	2⅞	1¾	¾		5	4	2¾	1½	

* This traverse is also recommended to wind warping cones or tubes on the same machine without change of traverse.

UNIVERSAL WINDING COMPANY
P. O. BOX 1605 PROVIDENCE, R. I.
BOSTON PHILADELPHIA UTICA CHARLOTTE ATLANTA

BEFORE AND AFTER

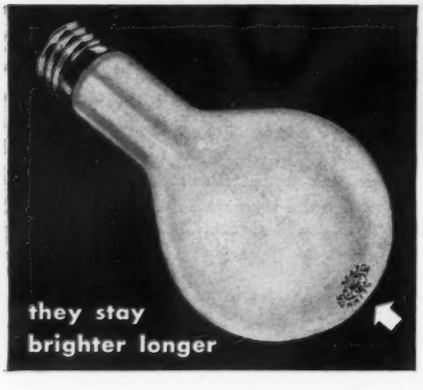
HOLSTON MANUFACTURING CO. LIGHT CONDITIONED WITH NEW BRIGHTER G-E MAZDA LAMP BULBS



Light Sensitive Cell

Ask your electric utility to check your lighting with one of these G-E Light Meters.

BEFORE . . . "We knew that poor lighting increases waste, impairs workers' eyesight, slows up production," said L. C. Green, superintendent of Holston Mfg. Co., Knoxville, Tenn. Picture above shows old lighting.



AFTER . . . "Now we have uniform light (35-40 footcandles) without glare or shadows," says Mr. Green. New installation consists of 150 twenty-four inch Glassteel Diffusers each containing a 750 watt G-E MAZDA lamp.

GENERAL ELECTRIC

SUPERIOR DESIGN

Your products travel safer—and reach the ultimate consumer in better condition in Gaylord Boxes—because they are made and designed for the products they carry.

At Gaylord, the country's top-ranking packaging experts check and recheck the special protection your products need . . . the hazards they face en route and in storage . . . the merchandising possibilities for your containers. No factor for increasing your packaging efficiency is left unprobed.

From this special Gaylord packaging research come the superior designs which today safely deliver and help merchandise the products of many of America's leading manufacturers. For you, too, we may be able to save money or solve a difficult shipping problem. Phone or write today. No obligation.

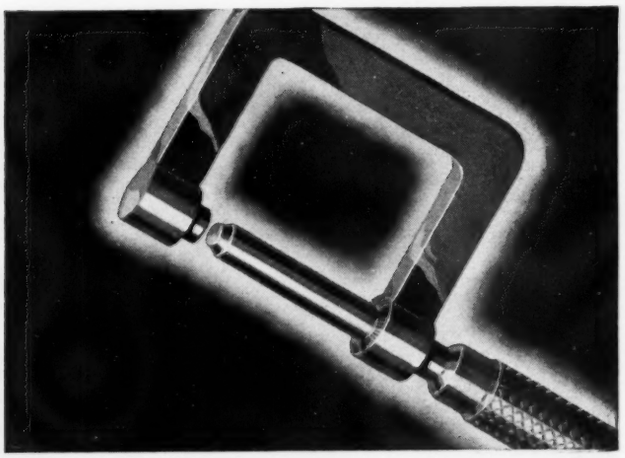
FOR TEXTILE PRODUCTS, Gaylord Boxes, either corrugated or solid fibre, assure mill-perfect arrival through the Gaylord "Extra Margin of Safety" built into every box.

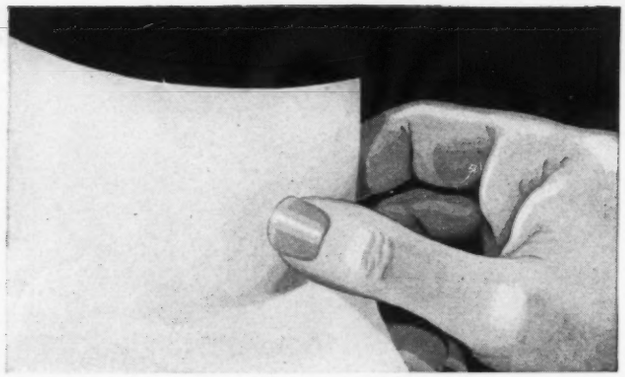
GAYLORD CONTAINER CORPORATION, General Offices: SAINT LOUIS

There is a Gaylord plant or sales office in your territory

HOW MUCH IS

$\frac{35}{100,000}$ OF AN INCH?





$\frac{1}{14}$ AS THICK AS

A SHEET OF PAPER!

Correct filaments help Westinghouse Mazda Lamps give MORE LIGHT—LONGER

The filament wire used in small Westinghouse Mazda Lamps is only 35/100,000 of an inch in diameter—1/14 as thick as an average sheet of paper!

The drawing of wire scarcely visible to the eye is an art and a science in itself. Tungsten metal which will produce correct crystalline structure must be selected, pressed into bars, tested—then swaged and drawn through a series of steel and diamond dies until it is reduced to fine wire of proper diameter. The wire is then carefully inspected, tested and wound into filaments.

The extreme care and precision with which filament wire is drawn and tested is typical of all the processes used in making Westinghouse Mazda Lamps—lamps that give you more light—longer.

Over 480 tests and inspections of materials and processes go into the making of every Westinghouse Mazda Lamp. If any one of these tests or inspections were omitted, the quality of the lamp might be impaired. When you see the Westinghouse trade-mark on a Mazda Lamp, you know that it is the best lamp science and engineering skill can make.

HOW TO JUDGE A LAMP

Lamps differ in quality. Inefficient lamps waste current and increase the cost of light. Our free booklet, *"How to Judge a Lamp,"* tells the important points to consider when buying lamps. Send for it today. Westinghouse Lamp Div., Westinghouse Elec. & Mfg. Co., 150 Broadway, New York, N. Y.

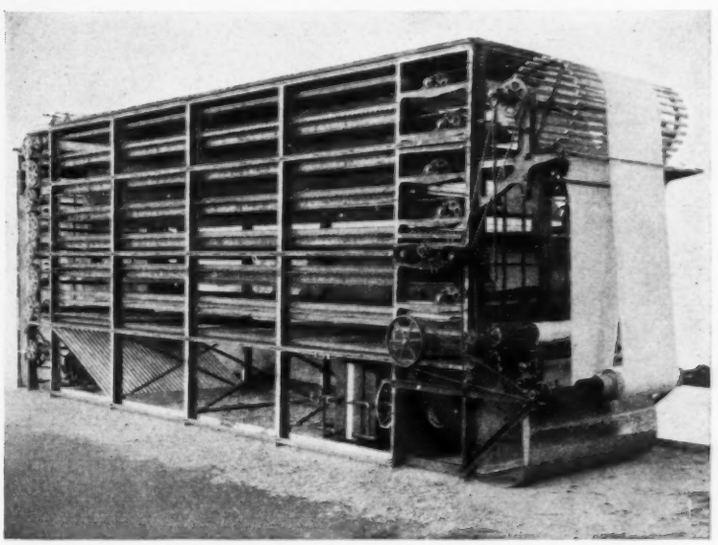
Westinghouse makes no compromise with quality

Westinghouse MAZDA LAMPS

Crepe fabrics handled by SKF-equipped machines

DRY QUICKLY

BUILT BY VAN VLAANDEREN MACHINE CO. SKF-EQUIPPED



Nothing has been omitted from the SKF Bearings on this Conveyor Type Drying Machine that would contribute to the efficient drying of crepe fabrics.

Because they are protected by oil-tight pillow blocks, there is no lubricant leakage . . . no spoiled product . . . no fire hazard. They're ready to go when the power is turned on and run smoothly as long as the machine is in operation. They require no adjustments, need only occasional lubrication, and maintain their close tolerances indefinitely. In short, they measure up to all requirements of textile men who want the right bearing in the right place.

SKF INDUSTRIES, INC., PHILADELPHIA, PENNA.

4148

● SKF *makes more types and sizes of ball and roller bearings than any other manufacturer in the world.*

SKF

BALL AND ROLLER BEARINGS

PROFITABLE ON THE BARGAIN COUNTER BUT NOT ON YOUR BALANCE SHEET

Seconds in hosiery may go big in the bargain basement, but they mean a definite loss to the manufacturer. That is why more and more manufacturers are turning the solution of their hosiery handling problems over to R-E Engineers. In one plant troublesome and costly variations in finish were traced to extraction. An R-E Centrifugal was designed to do the work and installed. The decrease in seconds and rejects more than justified its installation.

R-E Centrifugals are expertly engineered and may be built of any material indicated by processes or products . . . with any essential automatic or manual control devices . . . in any size or capacity.

Ask for a consultation with an R-E Engineer, Rochester Engineering & Centrifugal Corp., 106 Buffalo Road, Rochester, N. Y.

RE PRODUCTS

ROCHESTER ENGINEERING & CENTRIFUGAL CORP.

"For 25 years, GULF LUBRICANTS have helped us keep our equipment operating like new" ...SAYS THIS MILL SUPERINTENDENT

For the proper lubrication of the cable twisting frame shown below, which makes a 12-ply cord, the Gulf engineer recommended Gulf Legion Oil "D" and Gulf Supreme Cup Grease No. 3. These two quality lubricants have helped to keep this equipment in continuous trouble-free operation.

"It has paid us to follow the GULF Engineer's recommendations"

"OUR mill is the oldest operating cotton mill in this state—but, thanks to Gulf's quality lubricants, most of our machines are still mechanically as good as new. Our maintenance costs are still very low," says this mill superintendent.

To meet the needs of modern machinery, Gulf has perfected new and better lubricants. No matter what type of equipment you operate there are, in Gulf's broad line of more than 400 brands of oils and greases, exactly the right lubricants for each machine in your plant.

Let a Gulf engineer recommend the proper application of lubricants best suited to *your* equipment. You will benefit from this careful attention to lubrication by lower power costs, less maintenance expense and better production from each machine. Why not take advantage of this money-saving service at once?

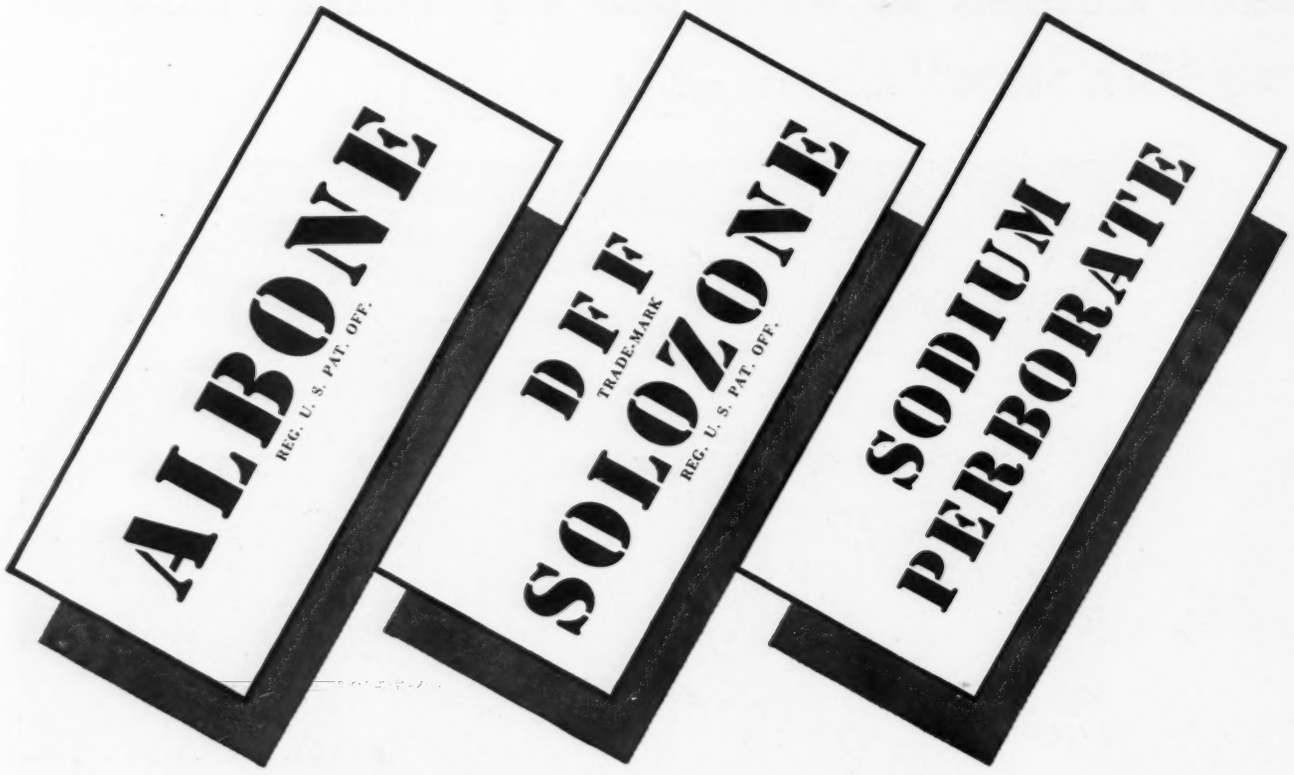
Listen to the new Gulf radio program—THE PASSING PARADE, with John Booth Neshit—every Sunday evening, Columbia network.

GULF OIL CORPORATION
GULF REFINING COMPANY

GENERAL OFFICES: GULF BUILDING, PITTSBURGH, PA.

GULF INDUSTRIAL LUBRICATION

Du Pont Peroxides...



plus Custom Service
For their Efficient Application

These three du Pont Peroxides cover the complete range of textile bleaching requirements. For true permanent whites, full color value, loftiness and elasticity, these Peroxides provide a *quality* bleach, uniform and easily controlled.

For their efficient application, du Pont offers you a Custom Service. Have one of our men come in for a thorough study of your mill conditions and requirements. Through his practical mill experience, he can give you a complete report, checked by our laboratory. If your costs can be cut and quality improved by the use of du Pont Peroxides, this report will show you how to do so. Write or call our nearest District Office.

1 ALBONE*— du Pont 100-vol. Electrolytic Hydrogen Peroxide.

2 DFF† SOLOZONE*— du Pont Sodium Peroxide, dustless, free-flowing.

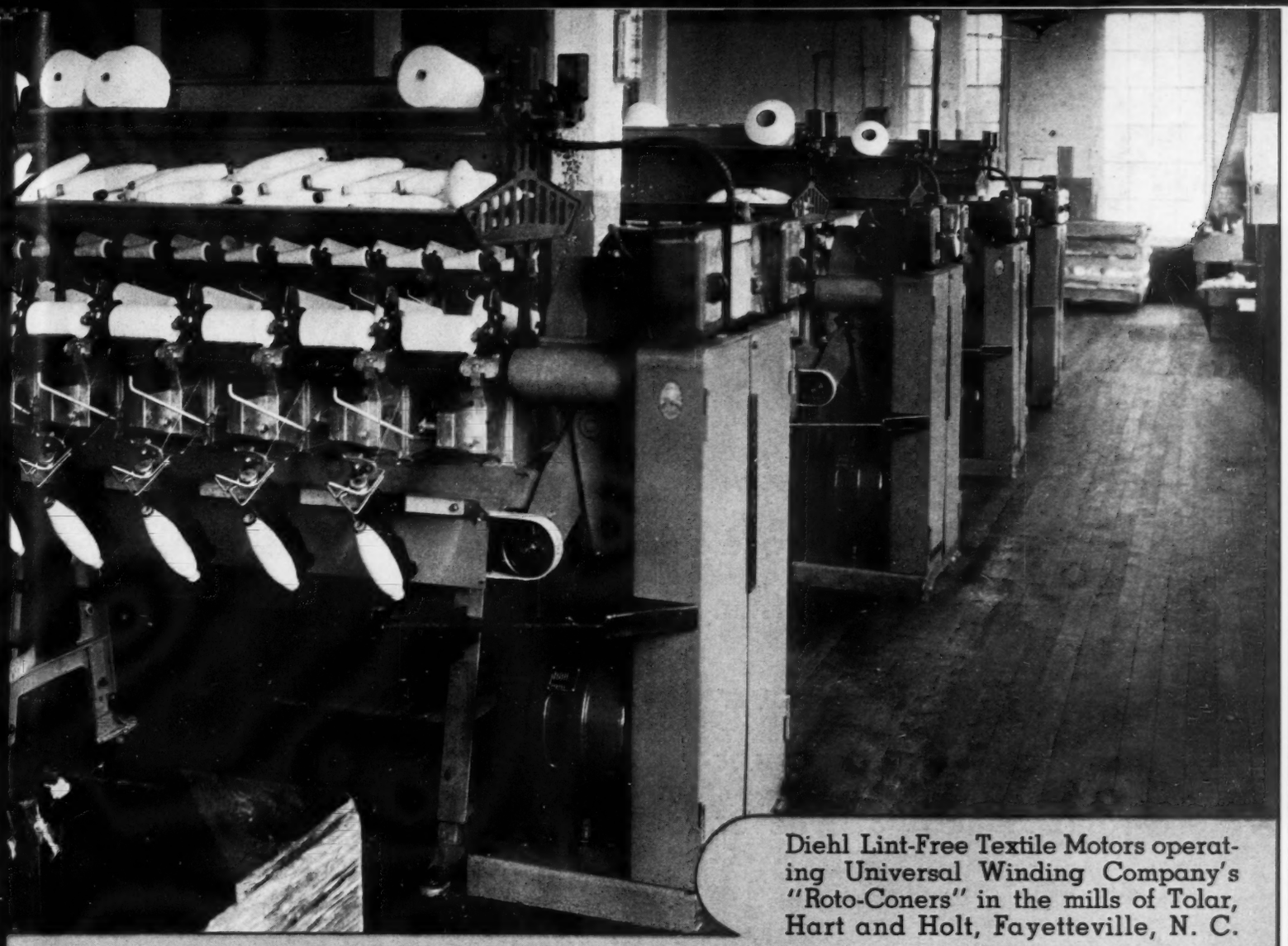
3 SODIUM PERBORATE.

*Reg. U. S. Pat. Off.
†Trade-Mark.

DU PONT
REG. U. S. PAT. OFF.

The R. & H. Chemicals Department
E. I. DU PONT DE NEMOURS & COMPANY, INC.
Wilmington, Delaware

District Sales Offices: Baltimore, Boston, Charlotte, Chicago, Cleveland, Kansas City, Newark, New York, Philadelphia, Pittsburgh, San Francisco



Diehl Lint-Free Textile Motors operating Universal Winding Company's "Roto-Coners" in the mills of Tolar, Hart and Holt, Fayetteville, N. C.

Users speak for . . .

DIEHL TEXTILE MOTORS

"For reliable protection against costly production interruptions caused by lint-laden textile mill motors—install Diehl Lint-Free Textile Motors"—say satisfied customers. Diehl Lint-Free Textile Motors are especially developed for this class of service. An exceptionally efficient, built-in ventilation system effectively expels lint, automatically keeping motors clean and cool.

These quality Diehl Textile Motors are also noted for high power factor and efficiency, low temperature rise, and high torque characteristics which provide rapid acceleration thereby reducing loss of production due to broken ends. Every detail of construction has been engineered to insure the utmost in dependability under these service requirements.

From many mills now using Diehl Lint-Free Textile Motors come interesting reports of cases where the application of these motors has improved production—provided new advantages—and resulted in savings that soon exceeded the initial outlay. Names of these mills can be had on request. Consult these users to secure first-hand information on the excellent results that can be obtained with Diehl Lint-Free Textile Motors. Write today.

GOLDEN ANNIVERSARY Diehl 1888 ★ 1938 ★

DIEHL MANUFACTURING CO., Elizabethport, N. J.
Electrical Division of THE SINGER MANUFACTURING CO.
ATLANTA BOSTON CHICAGO DALLAS NEW YORK PHILADELPHIA
Textile Dept., P. N. Thorpe & Co.—267 Fifth Ave., New York

Aldrich Synchronized Single Process Pickers

POSITIVELY DO MAKE EVENER LAPS

On every comparative test ever reported to us, Aldrich Synchronized single process pickers have made laps producing evener card sliver than laps from other pickers.

Cotton mills all over the United States have replaced other types of single process equipment with Aldrich Synchronizers and have never failed to improve the evenness of their card sliver.

Such results are no accident. They are due to the fundamentally correct Aldrich principle of *Synchronizing* all sections of the picker so that each contributes to the progressive evening of the lap as it passes through the machine.

Aldrich Synchronized single process picking is the ideal equipment for mills with long draft roving or spinning where the best possible laps are needed.

Made and installed by

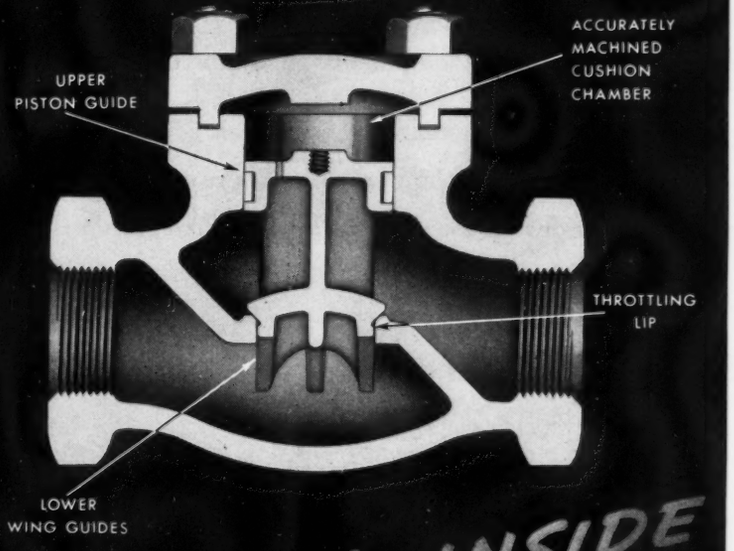
AldricH MachinE WorkS

Greenwood, South Carolina

CUSHIONED CHECK VALVES

for Unusual Service IN TEXTILE PROCESS MILLS

Crane No. 1507½ Ferrosteel Cushioned Check Valve. Cross section shown below.



IT'S WHAT'S INSIDE THAT COUNTS!

Step out into the plant—any plant, on process lines—power lines—wherever the flow of liquids and gases is controlled, you will find check valves. Their function—preventing dangerous back flow—is most vital in many piping systems. And because the conditions which they must meet vary widely, check valves deserve more care in selection than valves of any other type.

Regardless of the service, there is a Crane Check made to meet just those conditions. For example, consider those lines where pulsations in flow or intermittent service cause a serious slamming of the disc, which quickly destroys valves or necessitates extensive repairs. Here the Crane Cushioned Check offers distinct advantages. It freely permits flow, but cushions the pulsations and permits long, economical service. Every Crane Check has back of it the Crane resources of skilled engineering, extensive laboratory tests, quality manufacture and careful inspection.

When you need check valves, be sure to get the recommendation of the Crane Representative. Also, ask him for a copy of "Checking up on Check Valves," Crane's new booklet, which will be a real help to you in understanding the many different types of check valves and in selecting the correct type for the service you require.

CRANE

VALVES • FITTINGS • PIPE • PLUMBING • HEATING • PUMPS

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO

NATION-WIDE SERVICE THROUGH 134 BRANCHES AND MORE THAN 500 WHOLESALERS

TEXTILE manufacturers know that it's the fabrics of brilliant, clear color that are preferred in modern styling. The chemists know that *Du Pont Formic Acid* makes a solution that gives rapid but level dyeing.

Being an acid of low dissociation, proper ph conditions are present to give level dyeing with development of brilliant, clear colors.

Since Formic Acid is stronger than the very weak acids, it gives more complete exhaustion of the dye bath. There is no danger of acidic residues tendering the goods as Formic Acid is volatile.

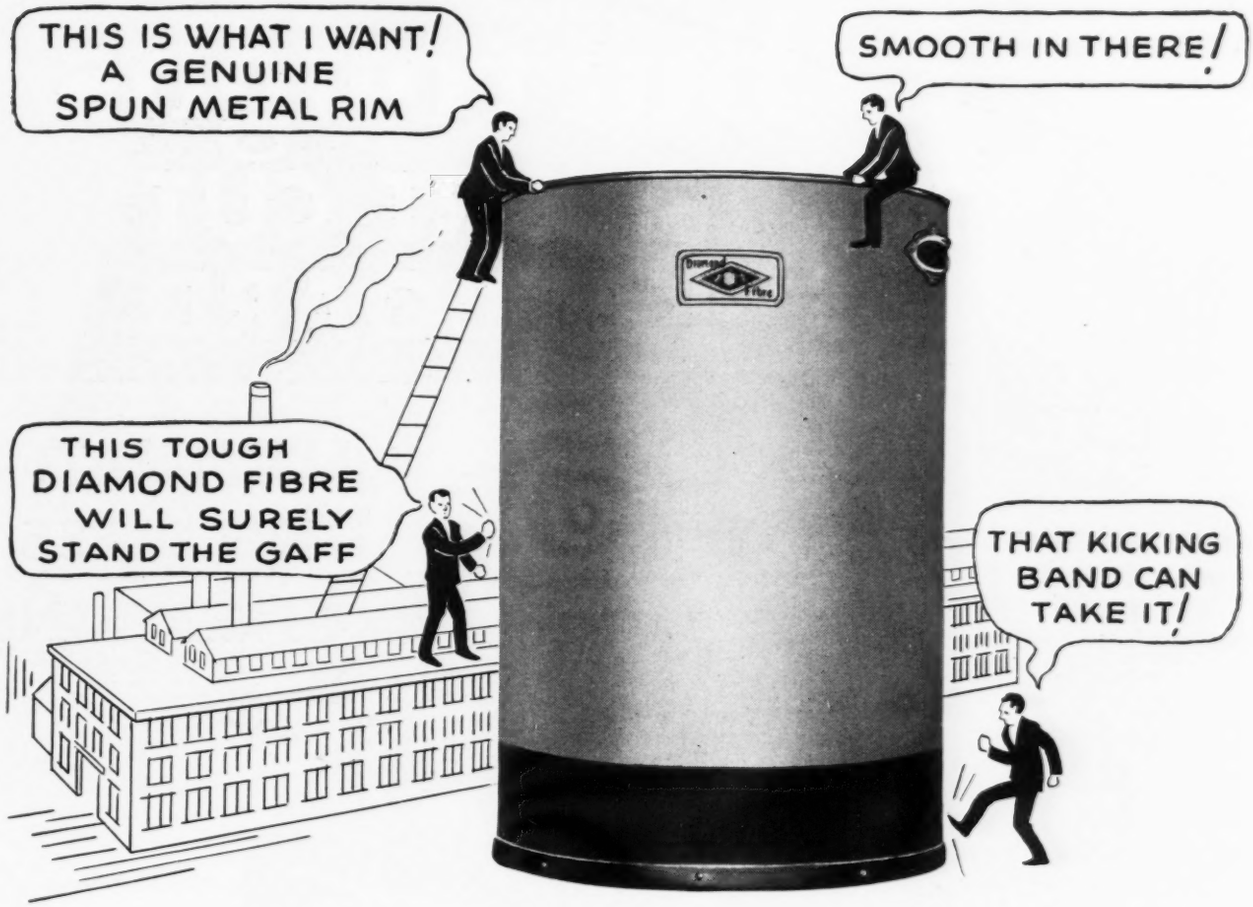
Order a trial supply of Du Pont Formic Acid today and watch results.

E. I. DU PONT DE NEMOURS & CO., INC.
GRASSELLI CHEMICALS DEPARTMENT
WILMINGTON, DELAWARE

OTHER DU PONT TEXTILE CHEMICALS

Acetic Acid
Aluminum Sulfate
Caustic Soda
Glauber's Salt
Sodium Hyposulfite
Sodium Phosphate
Sodium Sulfate
Sodium Sulfide
Sulfuric Acid

DU PONT
REG. U.S. PAT. OFF.
Formic Acid
IMPROVES DYEING OPERATIONS


THIS IS WHAT I WANT! A GENUINE SPUN METAL RIM
SMOOTH IN THERE!
THIS TOUGH DIAMOND FIBRE WILL SURELY STAND THE GAFF
THAT KICKING BAND CAN TAKE IT!

Barrels of Value in DIAMOND FIBRE MILL BARRELS

Here's a barrel that has everything but faults. Big, commodious, strong—yet light, easy to handle and easy to clean. As a container or conveyor of materials in process or finished products it ranks high in mills throughout the country.

Tough Diamond Fibre is used for the body of the barrel. The standard top rim is genuine spun metal. The handles are reinforced with metal. There is a wide fibre kicking band around the base and the wood bottom, which is standard, is securely fastened to the fibre with drive screws which go through the outside metal rim, and two layers of fibre and into the stout wood bottom. When desired, metal bottoms can be furnished. The fibre kicking band is standard, but barrels can be furnished with metal kicking band if wanted. Barrels with rolled fibre top reinforced with heavy wire ring can be furnished on order. Standard diameters are 15", 16", 18", 20", 22", 24", 26", 28" and 30".

Diamond Fibre Barrels can be made to suit your particular handling problem. Several standard types are "siftless" for handling sugar, soap, cereals; powder barrels—using all non-ferrous metal; barrels with covers and leather trunk style handles; barrels on wheels. Tell us your problem and we'll design a barrel to solve it.

CONTINENTAL-DIAMOND FIBRE CO.,
Newark, Delaware (Dept. C)

....We have a material handling problem, please have your representative call.

....Send us your complete Hollow Ware Catalog.

Name .....

Address .....

.....

Burroughs SHORT-CUT KEYBOARD

ELIMINATES NEEDLESS OPERATIONS

ALL CIPHERS ARE AUTOMATIC

Only on the Short-Cut Keyboard are ciphers written automatically. Thus, much of the work is done without touching a key.

SEVERAL KEYS AT ONE TIME

Only on the Short-Cut Keyboard can two or more keys be depressed at one time. This saves many needless operations.

ENTIRE AMOUNTS IN ONE OPERATION

Only on the Short-Cut Keyboard can an entire amount and the motor bar be depressed together, thus completely adding or subtracting the amount in one operation.

Let the local Burroughs representative show you on your own work what the short-cut method on the Short-Cut Keyboard can actually mean to you.

BURROUGHS ADDING MACHINE COMPANY
DETROIT, MICHIGAN

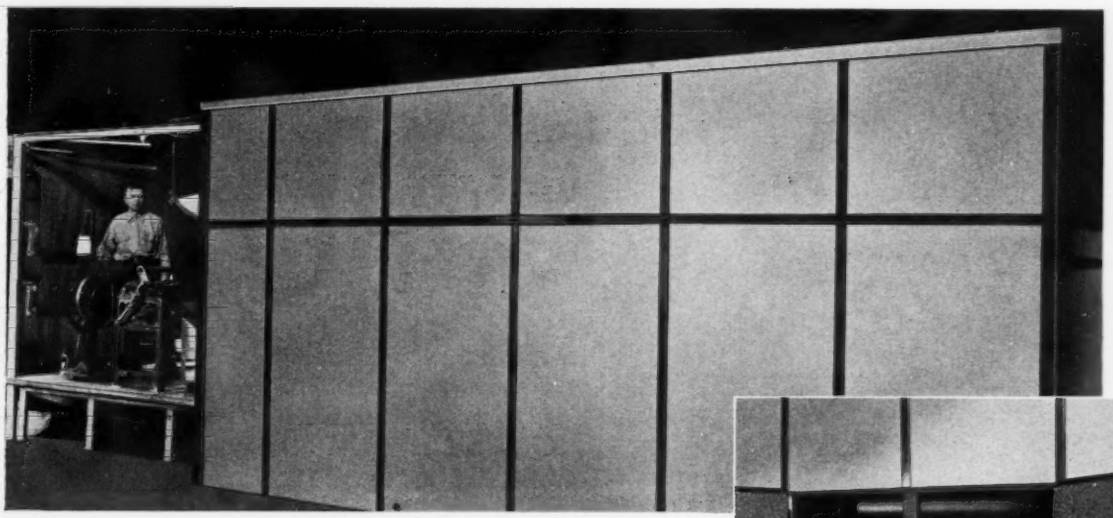
*

25.60
5.00
4.50
10.67
315.25
3.90
10.40
6,712.70
5.90
48.45
2.55
30.00
4.78
350.00
24.50
1.45
6.00
30.65
25.00
7,617.30*

This tape is a typical example of how thousands of needless operations can be eliminated by the Burroughs short-cut method. The amount 25.60, for instance, was listed and added by depressing the 2, 5 and 6 keys and the motor bar *all together, in one single operation,* instead of writing one figure at a time. The amount 6,712.70 was listed and added the short-cut way in two operations instead of seven. Thus, the Burroughs short-cut method eliminates needless operations in writing any amount.

THIS *New* CONDITIONER

DELIVERS CLOTH AT 30 YARDS PER MINUTE WITH GUARANTEED UNIFORM REGAIN.



The new Hunter Brilsonair Cloth Conditioner, embodying a totally new principle of restoring natural moisture to cloth after finishing, is setting new records for evenness and uniformity, flexibility and production. For example:—

One unit occupying less than 35 feet of floor space, installed in a Massachusetts mill, is conditioning worsted fabrics at 30 yards per minute with absolutely uniform regain and improved finish. In another New England mill, a smaller Conditioner gives comparable results at 25 yards per minute on fabrics ranging from 11 to 32 ounces. Furthermore, it is producing the desired regain within unvarying limits.

The Conditioner comes complete with air conditioning unit, the necessary motors, fans, heating coils, housing and control instruments. You need only wire the motors and bring your steam and water lines to the Conditioner, and you are ready to run.

Any mill man interested in guaranteed evenness of regain at high speeds, reduction of offshade goods, flexibility and uniformity in this important new field, is invited to mail the coupon.

NOTE: Hunter Brilsonair Conditioning and Drying Systems, designed, manufactured and sold jointly by the James Hunter Machine Company of North Adams, Mass., and the Bridges-Wilson Corporation of Boston, Mass. For complete details on room, yarn or stock conditioning, write either company.

JAMES HUNTER MACHINE COMPANY
NORTH ADAMS, MASS.

Southern Agents: Carolina Specialty Co., Charlotte, N. C.
Western Representative: E. G. Paules, 343 Bendix Bldg., 1206 Maple St., Los Angeles, Cal.
Canadian Agents: Colwool Accessories Limited
126 Wellington St., West, Toronto

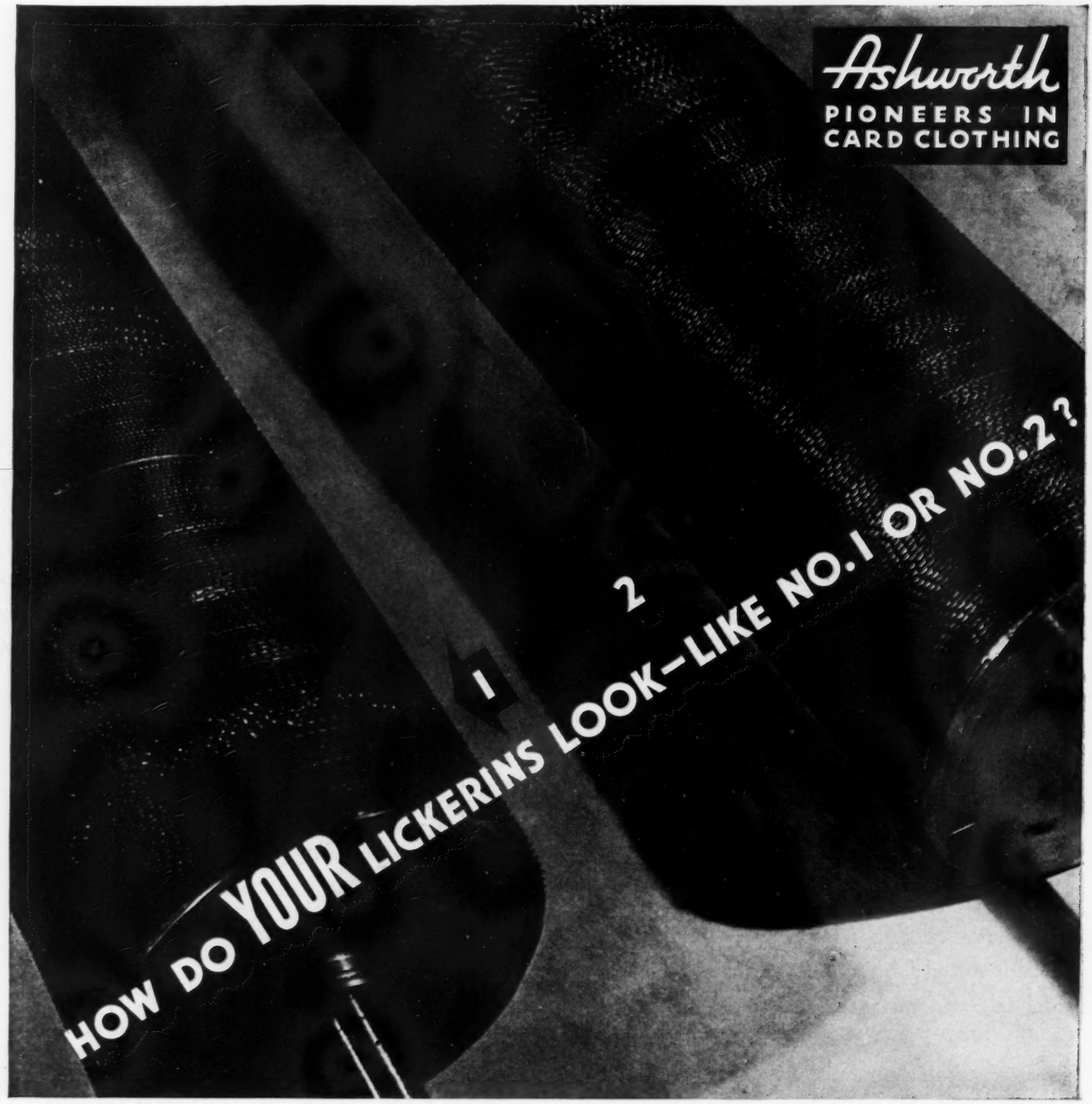
James Hunter Machine Co.
North Adams, Mass.

Please send full details on the Hunter Brilsonair Cloth Conditioner.

Name .....

Mill .....

Address .....



Good carding starts at the lickerin. Without good lickerins the rest of your carding equipment cannot perform to the best advantage, no matter how good its condition. Furthermore it is far-sighted economy to maintain lickerins in first class condition, because such a policy reduces waste and improves the regularity of the sliver.

We rewire lickerins at all our factories and repair shops and maintain a sufficient stock of wire to facilitate prompt deliveries. Furthermore Ashworth lickerin wire is cut and hardened in our own plant with modern, highly efficient equipment.

ASHWORTH BROS., INC., WOOLEN DIV.: AMERICAN CARD CLOTHING CO.

FACTORIES in Fall River, Worcester and Philadelphia. SALES OFFICES AND REPAIR SHOPS in Charlotte, Atlanta, and Greenville. SOUTHWESTERN REPRESENTATIVE: Textile Supply Co., Dallas, Texas.

PRODUCTS AND SERVICES: Card Clothing for cotton, wool, worsted, silk and asbestos cards and for all types of napping machinery; brusher clothing and card clothing for special purposes; lickerin wire and garnet wire; sole distributors for Platt's Metallic Wire; lickerins and top flats reclothed at all plants.

TWICE THE PRODUCTION WITH 1/3 LESS LABOR

THIS increased efficiency of the Foster Model 102 winders, as compared with older type machines, is effected with a corresponding improvement in quality of product. Cones are more uniform in density due to improved pressure and tension devices and degree of density can be accurately and easily regulated to suit the particular requirements. The angle of wind can also be quickly and economically changed to meet individual conditions.

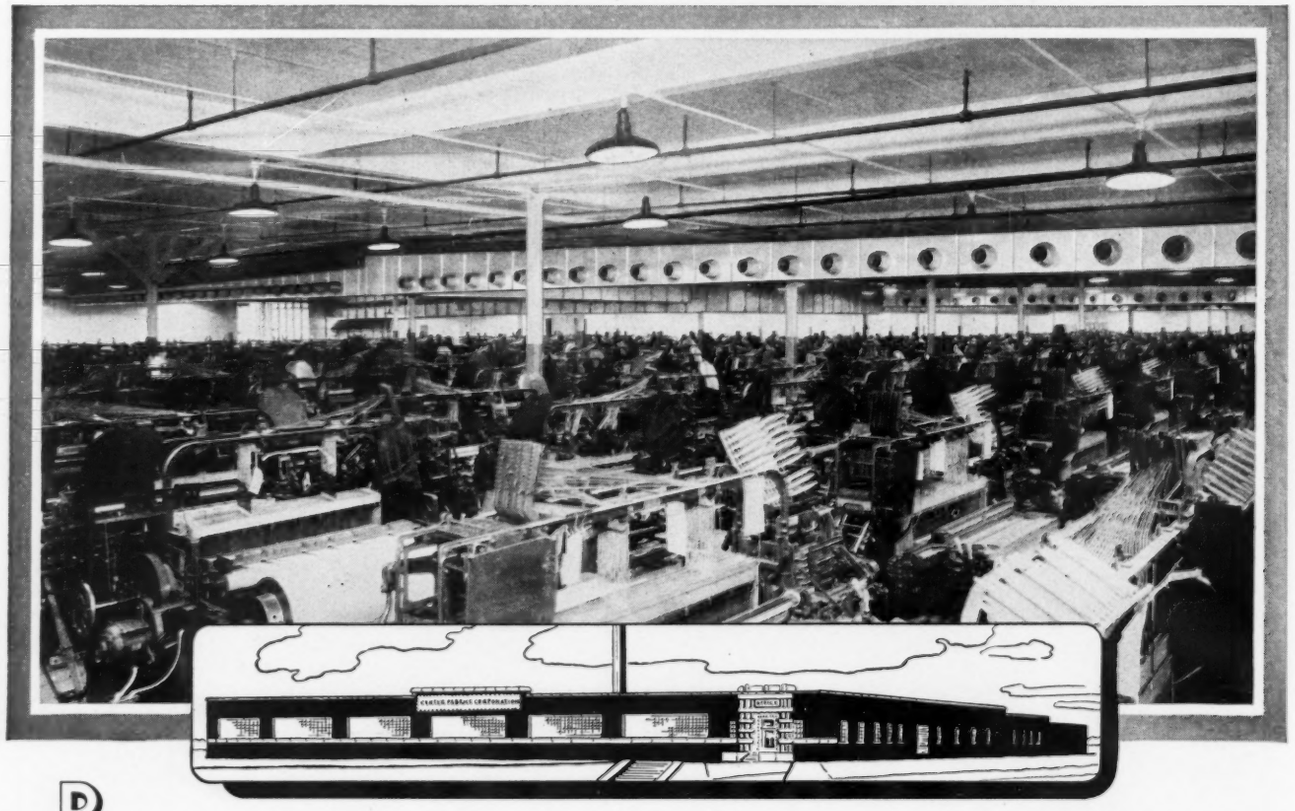
This modern winder is already simplifying the competitive problem for many cotton yarn mills. Let it do the same for you.

Descriptive circular on request.

FOSTER MACHINE COMPANY
Westfield, Mass.
Southern Representative, Fred P. Brooks, Box 941, Atlanta, Ga.

FOSTER MODEL 102

STURTEVANT HUMIDIFICATION AND EVAPORATIVE COOLING in "The Rayon Mill of the Year"



BECAUSE it represents the "last word" in rayon mill construction and equipment, the new plant of Carter Fabrics Corp., Greensboro, N.C., is referred to in September, 1937 issue of *Textile World* as "The Rayon Mill of the Year."

In the windowless preparation, throwing, and weaving rooms of this modern plant, Sturtevant Humidifying and Evaporative Cooling Systems provide year 'round air conditioning. They:

1. Automatically maintain desired temperature and humidity conditions.
2. Assure uniform air distribution, without drafts, in all parts of air conditioned areas.
3. Keep out dust, dirt and soot.
4. Provide comfortable working conditions for employees.

Executives of the Carter Fabrics Corporation are enthusiastic about the results these Sturtevant Humidifying and Evaporative Cooling Systems have made possible.

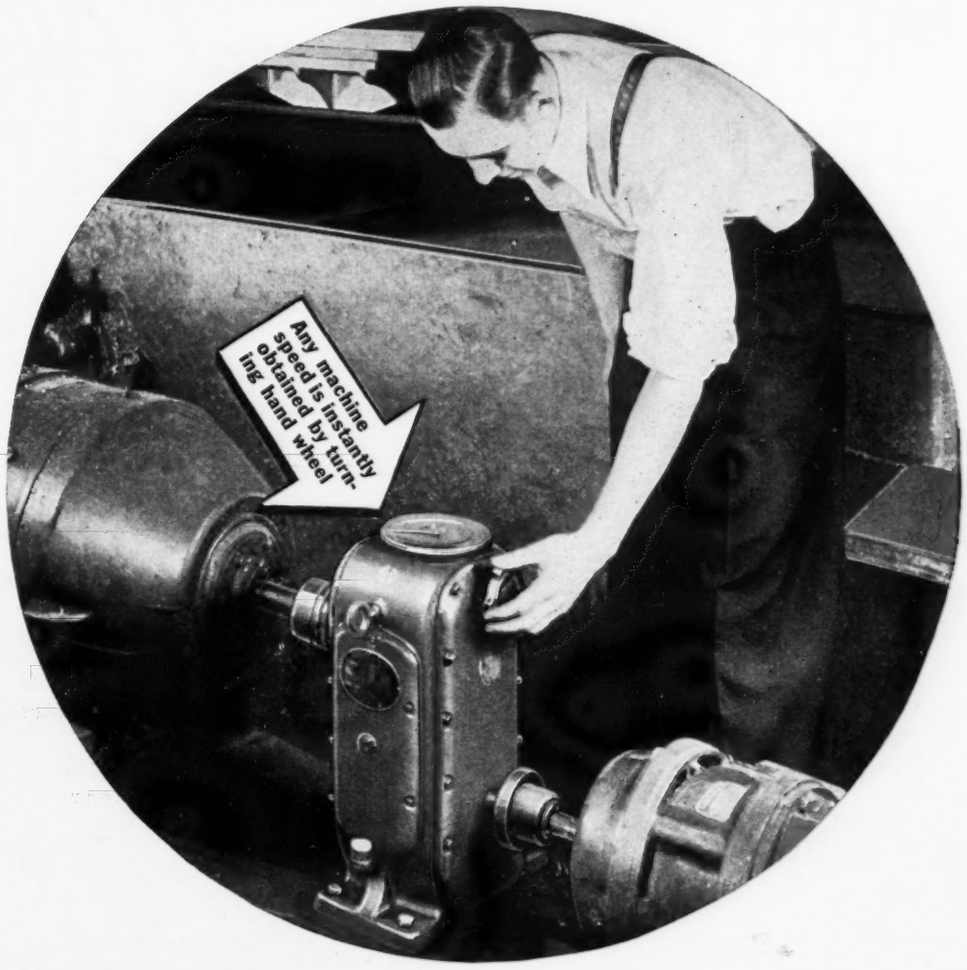
Recent similar Sturtevant installations include the new silk and rayon weaving mill of Carl Stohn, Inc., East Taunton, Mass. and Ramseur Hosiery Mills, Ramseur, N.C.

Above:—Weave shed, showing Crompton and Knowles shuttle changing looms and Sturtevant Air Distributing Ducts and Outlets which assure even air distribution without draft. System designed and installed by Cooling and Air Conditioning Division of B. F. Sturtevant Co.

Sturtevant
REG U.S. PAT. OFF.
Evaporative Cooling
FOR BETTER PRODUCTS
AT LESS COST

ACMA

COOLING AND AIR CONDITIONING DIVISION
B. F. STURTEVANT CO., HYDE PARK, BOSTON, MASS.
ATLANTA · CAMDEN · CHICAGO · GREENSBORO · NEW YORK,



SPEED CONTROL with a Twist of the Wrist WHILE THE MACHINE IS IN OPERATION

● Accurate, instantaneous speed change—without shutting down the machine—that's what the Link-Belt P. I. V. Gear makes possible.

It is an all-metal, unusually compact unit, available for horizontal and vertical mounting of the basic unit; also motorized and with gear reduction sets. Can be arranged for manual or automatic operation.

Simple and easy to operate—a turn of a hand wheel sets the indicator at the desired speed and the machine changes instantly. There are no "steps" or frictional contacts—a positive chain drive with opposed conical wheels varies the speed to any degree desired—even to a fraction of an R.P.M.—in one single, quick movement. Use it for greater machine versatility—to adapt machine speeds to long or short runs, frequent changes in character of work, etc.

LINK-BELT P.I.V. GEAR SPEED VARIATOR

Send for Book No. 1574. Also send for catalogs covering Link-Belt silent and roller chain drives, speed reducers, and a complete line of transmission units such as anti-friction and babbitted bearing pillow blocks, clutches, couplings, take-ups, shafting, gears.

Link-Belt Company, Philadelphia, Indianapolis, Chicago, Atlanta, San Francisco, Toronto, Baltimore, Boston, Buffalo, Cleveland, Dallas, Denver, Detroit, Grand Rapids, Kansas City, Mo., Los Angeles, Louisville, Minneapolis, New Orleans, New York, Oakland, Calif., Pittsburgh, Portland, Ore., Salt Lake City, Seattle, St. Louis, St. Paul, Wilkes-Barre, Montreal, Vancouver. 7420

LINK-BELT POSITIVE DRIVES INCLUDE

"MERCURYS" *Reveal All* IN FULL-FASHIONED HOSIERY

Eighty-seven per cent of the perceptions which guide a worker's performance are based on sight. That's why mills such as the full-fashioned, illustrated above, prefer Cooper Hewitt light. "High seeability" is what you get with this long, detail-revealing light. It gives that extra quality that makes better work easier.

Whether it be full-fashioned hosiery, woolen blankets, or cotton cloth, foresighted textile plants have decided that good seeing is always good business. With the new Cooper Hewitt engineered to the job . . . the best lighting is more practical and less expensive than ever before. Ask us to prove how you can profit from this modern light. General Electric Vapor Lamp Company, 853 Adams Street, Hoboken, N. J.

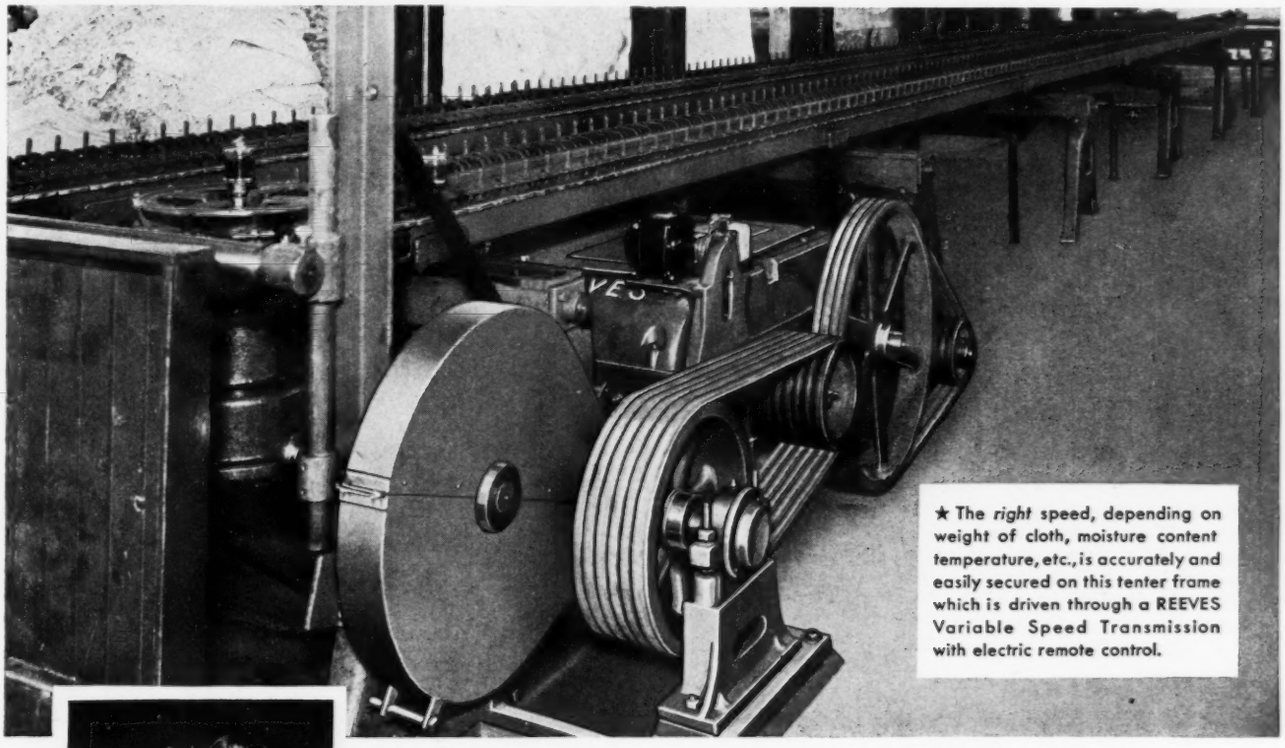
Modern Cooper Hewitt lights are more efficient in every respect than ever before. Let us give you the facts about this long, detail-revealing light source which more than a million workers and their employers now enjoy. Write for descriptive literature.

GENERAL ELECTRIC VAPOR LAMP COMPANY

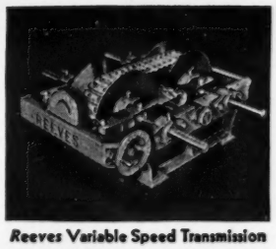
9130

WRONG SPEEDS WASTE —RIGHT SPEEDS SAVE

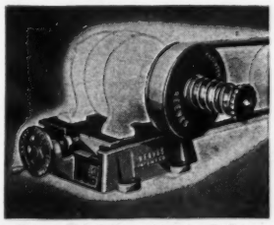
On Any Driven Machine in Textile Preparation and Finishing



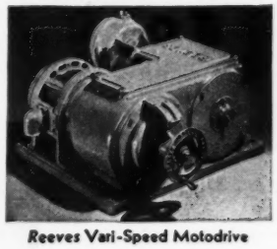
★ The *right* speed, depending on weight of cloth, moisture content temperature, etc., is accurately and easily secured on this tenter frame which is driven through a REEVES Variable Speed Transmission with electric remote control.



Reeves Variable Speed Transmission



Reeves Vari-Speed Motor Pulley



Reeves Vari-Speed Motodrive

★ Here's one question on which textile machine designer, mill executive and operator all agree. You can't expect best results, on any textile machine that is not operating at *the right speed*.

On spinning frames or silk winders, on beamers, warpers, sizers, slashers, on tenter frames and drying cans, on mangles, nappers and palmers—*or any other textile machines*—work must proceed, *not too fast*, and *not too slow*. If correct speeds are not *accurately secured* and *positively maintained*, materials are under or over-processed, stretched too much or not enough. One machine gets "out of step" with the next in line. Production slows down, costs rise, and quality suffers.

In the solution of all these textile production problems **REEVES SPEED CONTROL** is absolutely *accurate, positive* and *economical*. Ease of control—manual, remote or completely automatic—is also a feature responsible for the 100,000 **REEVES** units now in service. Three basic designs provide wide adaptability. May we send more information? Write us.

ACCURATE POSITIVE REEVES SPEED CONTROL

★ ★

REEVES PULLEY COMPANY, DEPT. T-88, COLUMBUS, INDIANA

Send copy of new catalog No. G-384, which describes the complete REEVES line of speed control equipment and how it is being used in textile plants.

Name.....

Company..... *Dept*.....

Address.....

aye, SIR
AND A SAVINGS, TOO
with
JACOBS
Individualized
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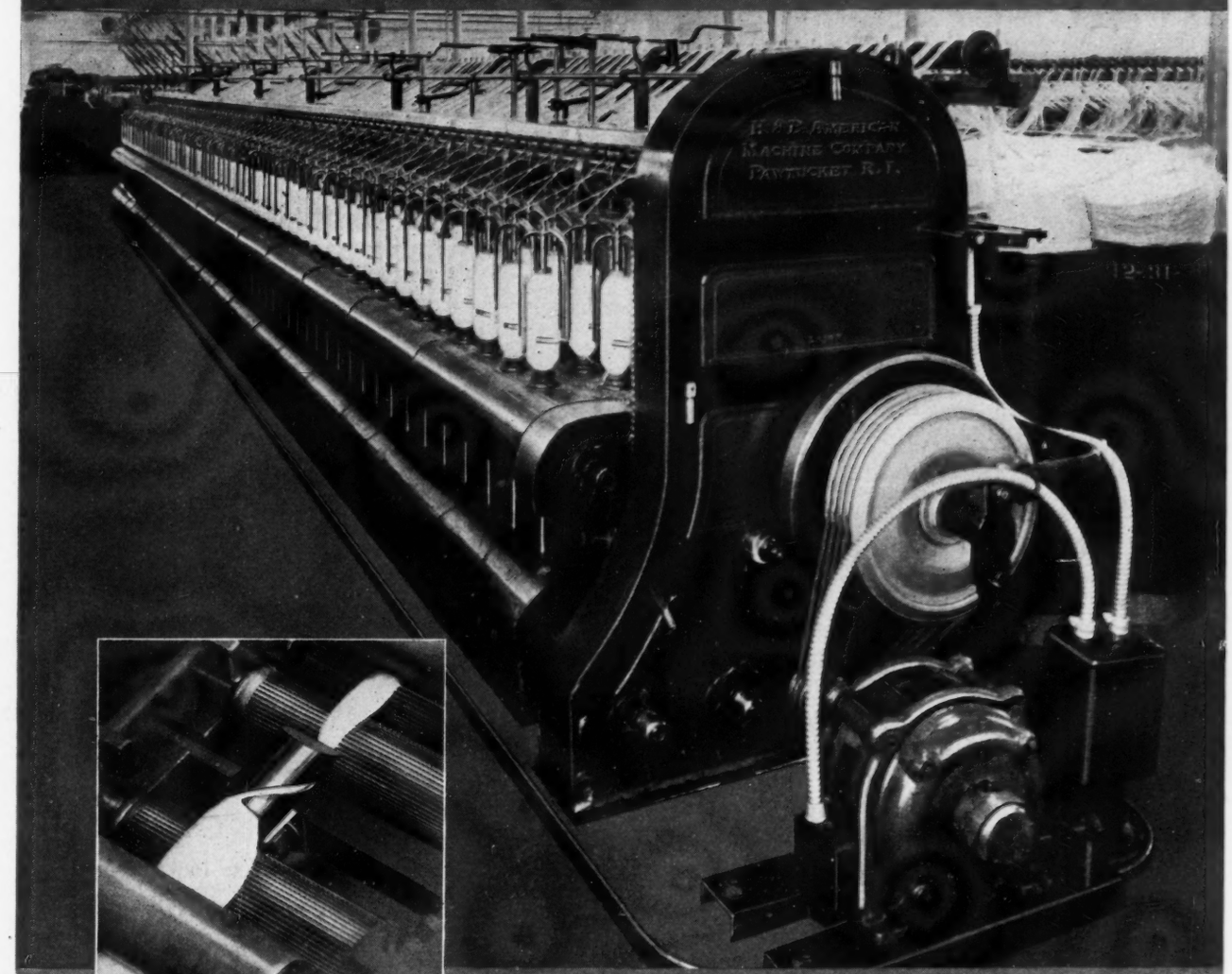
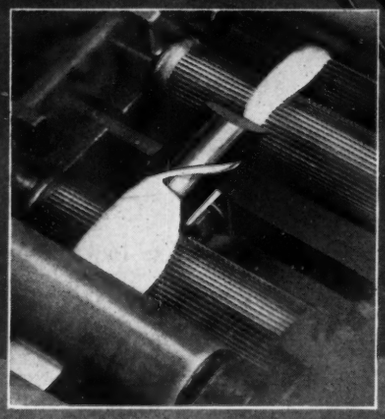
GRAPHIC ARTS COMPANY
CLINTON, S. C.

H & B HIGH-DRAFT ROVING SYSTEM for ONE or TWO Process Roving





ONE OF MANY SUCCESSFUL INSTALLATIONS

APPLICATION - Usually to intermediate or roving frames, number of rollers (4 or 5) being determined by drafting requirements.

METHOD - Takes sliver from drawing frame and drafts up to 35, producing up to 6 hank roving in one operation for regular or long draft spinning. To produce finer roving the usual practice is to go from the high-draft frames to conventional 3 roll jacks or fly frames.

RESULTS - Successfully operating in over 50 mills, some of which have already placed repeat orders.

THE HEART OF THE SYSTEM - Patented Scroll Condenser (made of Bakelite to eliminate static) which gives sliver a half turn of twist and folds thinner edges toward thicker center in preparation for next drafting operation.

H & B AMERICAN MACHINE COMPANY

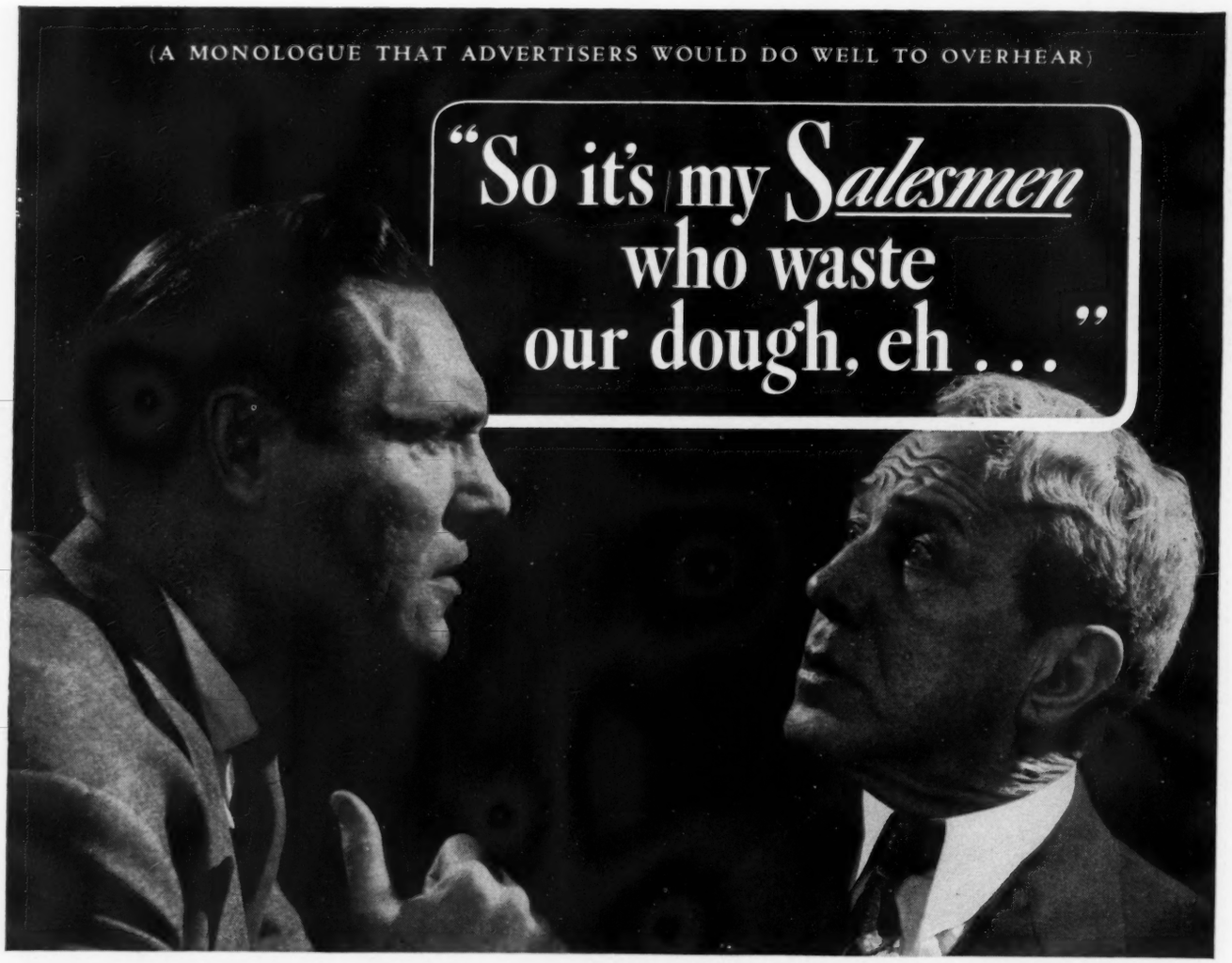
- - - TEXTILE MILL MACHINERY - - -

PLANT AT PAWTUCKET, RHODE ISLAND

BOSTON OFFICE:
151 Devonshire Street

ATLANTA OFFICE:
815 Citizens & Southern National Bank Building

CHARLOTTE OFFICE:
1201-3 Johnston Building



roared the Sales Manager to the Treasurer . . .

"I think our salesmen's 'swindle sheets' are too high, do you? Claim they should spend money only on prime prospects, hey? Well then, why don't we do the same thing with our advertising appropriation?

"You tell me that every cigar a salesman hands out these days should bring in an order, and I'm telling you that more of our advertising money should be concentrated in the textile field . . . to cultivate the men our salesmen have to sell. For instance, let's make sure we're doing an impressive job in COTTON, the publication that our prospects look to for progressive ideas and dependable news. That'll give us what we need *right now:* selling help *where it counts,* at less cost than a cheap cigar per prospect.

"If you'll switch a bigger chunk of our advertising budget to COTTON, I'll confine my sales expense to our hot prospects."

"Okay, wild man," said Treasurer MacTavish, "it's a deal!"

Highest editorial standards and publishing integrity. ABP

COTTON

bears the twin hall-marks of known value

ABC Proved reader interest in terms of paid circulation.

The Best Way To Get The Most Value From Every Dollar's Worth of Starch—

ARCY is used for liquefying the less costly starches for producing superior results in warp sizing and cloth finishing, and its use continues to grow as more mills find out about its advantages.

"It is not because of the dollar or so we save in the cost per kettle of size that we use ARCY Liquefied 'less costly' starch, but because of the superior results we get from its use."

This is what users say, who have used ARCY for more than six years.

DRAKE CORPORATION
NORFOLK, VIRGINIA

ARCY

VALUABLE PAMPHLETS

Up-to-Date Practical and Usable Data

The pamphlets listed below provide a source of valuable information on a wide variety of topics that will be found usable in every-day textile mill operation. They were reproduced from articles that have appeared in recent issues of COTTON, which created so much interest and favorable comment that it was decided to reproduce them in pamphlet form. They are available, at the prices indicated, as long as the supply lasts. In ordering, simply designate by alphabetical letter the pamphlets desired, and enclose cash with your order.

A- **"The Slasher Room" by Joseph W. St. Rock.** A practical discussion by a practical mill man covering the slasher room, its equipment, methods, etc. A series of three articles. All three for 35 cents.

•

B- **"A Study of the Twister Ring."** This is a five-page discussion of wet twisting, dry twisting, cleaning band rings, selecting the proper ring size, and method of lubricating twisting rings. It is illustrated. Figures and practices are included based upon current mill practice under varying conditions. **Price—20 cents each.**

•

C- **"Loom Reeds" by Ivar Moberg.** In two parts covering the hardness of reed wire, oval versus flat dent reeds, metal and pitchband reeds, proper depth of reeds, size of ribs, air space, reed calculations and many other points of interest to mill men. Reprinted in pamphlet form from the May and June 1937 issues of COTTON. No price. They are yours for the asking.

•

D- **"A Practical Analysis of Large Package Spinning."** In which the author takes the matter of large package spinning apart to see what makes it tick. **Price—20 cents each.**

•

F- **"How Loom Fixers are Trained at the Bibb Plant in Columbus" by C. E. Dorn.** A description of training fixers in one of the outstanding southern mill organizations. In two parts, **both for 20 cents.**

•

G- **"Uses and Advantages of Anti-Friction Bearings on Textile Machinery."** An eight-page illustrated discussion of anti-friction bearings in the textile industry. **Price—35 cents.**

M- **"Warp Breakage—A Study of Its Importance and Elimination"** by Albert Palmer. Some of the causes of loom stoppage and a discussion of knots and their proper use. **Price—20 cents each.**

•

N- **"Leno Weaving and Designing"** (in four parts) by Thomas Nelson. This series covers the elementary designs and the subsequent development in the leno field. A 14-page discussion, illustrated, that men in this work will find instructive. **Price—60 cents each.**

•

P- **"The Mill Village Problem."** A discussion of employee home ownership, labor turnover, and maintaining community standards. **Price—20 cents each.**

•

Q- **"The Faith that is within Us," "Dynamite or Leaven?" "Not So Different," and "For Value Received."** Here are four essays by Marjorie A. Potwin, Ph.D., which discuss the labor situation in Southern mills. **Price individually—25 cents. For all four—70 cents.**

•

R- **"The Care and Operation of the Banner Split-Foot Machine"**, in five articles. If you have these machines you will want these discussions. **All five for 50 cents.**

•

S- **"Straightening Needles for Full-Fashioned Machines"** by B. D. Gaddy. A 6-page article with illustrations showing how it is done. **Price—20 cents.**

•

T- **"Eliminating 'Washboard' Effects in Manufacturing Ringless Hosiery"**, by Henry W. Hoffman. A 4-page discussion for 20 cents.

•

U- **"Sizing Hosiery from Full-Fashioned Machines"** by B. D. Gaddy. A description of a method found to be accurate and practical. **Price—20 cents.**

ADDRESS

EDITORIAL DEPARTMENT

COTTON

Serving the Textile Industries

GRANT BUILDING, ATLANTA, GA.

2 SURE WAYS to Profit

Dodge Loom Drives for Increased Production. Dodge Capillary Oiling Loom Bearings for Lower Operating Costs . . . . . .

If you were to really get down to net — the advantages of Dodge Loom Drives and Dodge Capillary Oiling Loom Bearings would be — "More and better cloth at lower costs."

The Dodge Drive smooths out loom operations — It has reserve power to meet peak requirements — The Bearing embodies the capillary oiling principle which is positive and unfailing — It greatly reduces maintenance costs.

These units are described in the Dodge Bulletin A-236. Send for a copy.

DODGE MANUFACTURING CORPORATION
Mishawaka, Indiana, U. S. A.

THE *Right Drive* FOR EVERY JOB

DODGE

MISHAWAKA

THERE IS ADDED VALUE IN THE NAME DODGE

"If I were an ADVERTISING MANAGER"•

That's just one of the talks to be delivered anonymously by a masked speaker that will set every man thinking at the Annual Conference of National Industrial Advertisers Association in Cleveland, September 21-23. A second masked speaker will tell what he would do if he were a publication representative.

We're not going to tell you much here—just highlight the program enough to make your mouth water and your brain tingle.

T. M. Girdler, Chairman, Republic Steel Corporation, is scheduled for the opening address and when "T. M." talks he says something.

J. H. McGraw, Jr. will talk on "What I Would Do *Now* If I Were An Industrial Advertising Manager."

The new Publisher's Statement will receive full discussion.

Clinic sessions, so popular last year, will again cover a wide range of interesting subjects. Two half-day sessions instead of one.

A general conference session will cover such subjects as "Preparing the Plan", "How to Gather Usable Material", "Copy Technique", "How to Sell Management", "Co-ordinating Sales and Advertising" and "How and Why to Use an Industrial Agency."

Another session will deal with "Problems of the Small Advertiser", "Production Problems", "Public Relations"—and there are many others.

If I were an Advertising Manager, I certainly would start now to make plans to attend the 16th N. I. A. A. Conference even if I had to hitch-hike to Cleveland. And I would send in my advance registration now to—Ed. Bossart, Bailey Meter Company, Ivanhoe Road, Cleveland, Ohio.

IF I EMPLOYED AN ADVERTISING MANAGER—I would make certain that he attended this Conference, because changing times and markets demand a changed viewpoint—a new viewpoint that can be obtained only by hearing discussions by men whose experience is up-to-the-minute—right up to September 21st.

NIAA
NATIONAL INDUSTRIAL ADVERTISERS ASS'N.

NATIONAL INDUSTRIAL ADVERTISERS ASSOCIATION

100 EAST OHIO STREET • CHICAGO, ILLINOIS

HOWARD BROS. MFG. CO.

present

TUFFERIZED Card Clothing

made with Tufferized Precision Parts

Many years ago hand-made staples of iron wire were used. Then came automatic machines using hardened, tempered steel wire. Now, after three years of testing and experimentation, we have developed **Tufferized Precision Parts** perfecting the cutting and setting of staples in the justly famous Patented Tuffer Foundation. A combination that's hard to beat.

These improvements will allow more uniform carding, nice smooth finish to coarse or fine yarns, and longer service. The carder's dream of true and positive setting from beginning to end of the strip is now a reality.

In the NEW TUFFERIZED CARD CLOTHING

- **Burrs will be entirely eliminated**
- **Wires will be straight and uniformly spaced**
- **Grinding will be greatly reduced**
- **And it will set tighter and lay flatter on your cylinders to insure more even setting of the rolls.**

Write for any further explanation or more details. Be among the first to equip with new **TUFFERIZED CARD CLOTHING.**

Micro-photos showing improvements resulting from Tufferized Precision Parts.

Now every wire can be cut clean and free from burrs.

Now every staple is perfectly square and uniform.

Now every staple seats square, flat and tight with each wire parallel and uniform.

HOWARD BROS. MFG. CO.

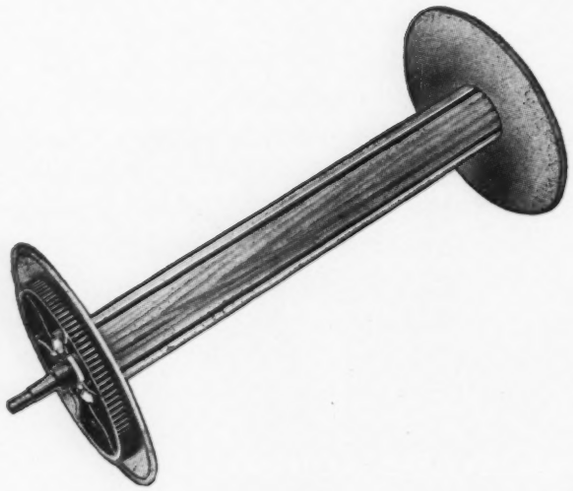
HOME OFFICE AND FACTORY: WORCESTER, MASS.

Southern Plant: 244 Forsythe St., Atlanta **Branch Offices:** Philadelphia, Dallas

Canadian Agents: Colwool Accessories, Ltd., Toronto 2, Canada

Products: Card Clothing for Woolen, Worsted, Cotton, Asbestos, and Silk Cards — Napper Clothing, Brush Clothing, Strickles, Emery Fillets, Top Flats Recovered and extra sets loaned at all plants — Lickerins and Garnett Cylinders from 4 to 30 inches and Metallic Card Breasts Rewired at Southern Plant — Midgley Patented Hand Stripping Cards, Howard's Special Hand Stripping Cards and Inserted-Eye and Regular Wire Heddles

WEST POINT LOOM BEAMS



Increase Efficiency!

WEST POINT LOOM BEAMS make possible continuous and quality production in the weave room, and the elimination of bad selvage! Here's why:

These beams run true! The heads are equidistant at all points! Therefore, an even amount of yarn winds on the beams! Thus no high and low places at the edge of the warp with consequent bad selvage!

The heads are made with a proper thickness of material at what would otherwise be weak points. The pockets are machined inside so the barrels fit snugly. The inside of the pockets are coated with heavy enamel paint in order to prevent the formation of rust from weave room moisture which might collect and stain the yarn. The barrels are made of seasoned and kiln dried carefully selected wood.

We particularly recommend Etchison Patented Steel Heads. They are practically indestructible and act as a shield protecting the gears.

Also manufacturers of special machinery, cloth room machinery, sizing vats, spiral gears, beam racks, other textile machinery, and repair parts.

WEST POINT FOUNDRY & MACHINE CO.

(Batson-Cook Company, Owners)

WEST POINT, GEORGIA

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ATLANTA, GEORGIA

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VOL. 102 — AUGUST, 1938 — NO. 8

COTTON
SERVING THE
Textile Industries

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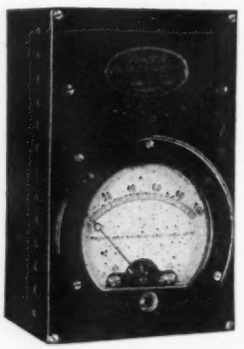
DON'T BE CAUGHT *with your* PLANTS DOWN

Tight bearings, improper adjustments, loose connections cost you money in needless electrical energy. Such conditions usually precede costly breakdowns and loss of production.



Model 49 loom adjustment check meter for voltages up to 600 and current capacities up to 5 amperes. For use with Walker switch pedestal and test block equipment.

The Walker method of periodic power consumption tests will tell the story of the condition of your machinery. Any loom fixer can make a test in a minute's time without shutting down the loom. The equipment is inexpensive and easy to use. This instrument is available in a variety of ranges. The most popular range is 1 ampere 600 volts. This will measure loads up to one horsepower. It was designated as an economical tool to place in the hands of the loom fixer or overseer to make an instantaneous check on the power consumption of the small motors regularly found in textile mills.

The Model 19 is supplied in voltages up to 600 and current capacities up to 10 amperes.

WECO ATLANTA

WRITE TODAY FOR CATALOG No. 7

WALKER ELECTRICAL CO.
ATLANTA, GEORGIA

SHORTS AND REMNANTS

FORTY YEARS OF TEXTILE PROGRESS

Mr. Harmon

America's early settlers were principally English, and stubborn. Some of them knew textile manufacturing. Others were determined that the new country could do anything that England could do, and textiles prospered, first in New England and then spread into the southern territory. The backbone of textile manufacturing progress was and still is native resourcefulness and a willingness to interchange ideas. In the early '90s, New England textile capital had already started to look for new fields, principally in the South. In 1898, with America at war with Spain in Cuba, and the country in a state of change generally, a well known Atlanta poet, author, and publisher, Harry E. Harmon, foresaw the coming growth of textiles in the South and the need of a publication to serve this growing field. Thus came into being COTTON. Under the ownership of W. R. C. Smith, who purchased the paper in 1904, COTTON was expanded into a clearing house for ideas and manufacturing information for the new mills. The basis of interchange of ideas worked—not only with southern cotton mills, but with other branches of the textile industry throughout the country and in foreign countries, so that COTTON expanded to render this same service to all corners of the globe, as evidenced by the letters appearing on this page each month from all phases of textile manufacturing throughout the world. Forty years it has been growing with the industries it serves, and the highlights in textile progress through these years will be presented in the October issue. Both reading and advertising pages illustrate developments and changes in textiles since 1898 and the forces that have contributed to textile progress. We hope you like it. In the meantime we would be glad to hear from any "old timers" who have early (1900 or previous) copies of COTTON as we will pay a premium for these. Maybe we could offer a prize for our oldest continuous reader. What have you to offer that will be of interest to "Forty Years of Textile Progress" in October?

Mr. Smith

Hooked Rugs

"We have been readers of COTTON for many years and have been able to obtain much interesting and valuable information from its pages.

"Knowing you are a clearing house for all textile information, we would like to know whether or not it is possible for you to send us an address or two. Of late we have become interested in hooked rugs and ask, therefore, that you kindly supply us with the addresses of some companies that we can contact for machinery, equipment, etc. in connection with this matter."

F. GEIGER

Amsterdam Textiles
Amsterdam, N. Y.

We recall many ties, shirts, trousers, snatched before their time was up for hand-hooked rugs. Apparently most of machinery used is of personal design. Any information to the contrary will be appreciated by the above firm direct or through the "clearing house".

◆

"Washboard Hosiery"

"In your issue of December 1934 there appeared an article entitled 'Eliminating "Washboard" Effects in Manufacturing Ringless Hosiery' by Henry W. Hoffmann. We are very much interested in obtaining 150 copies of this article and we would appreciate it if you would let us know by return mail whether these copies are available and at what price."

SAMUEL SELMAN

Fox Chase Knitting Mills, Inc.
Philadelphia, Pa.

Single copies of this article (appearing 4 years ago) will be supplied for 20c each; quantity rates on application.

Wants Construction News

"You gave me a copy of "Construction News" when you called at the office last Monday. We haven't ever received this publication, and we would appreciate getting it regularly very much."

S. M. FERRER

Spearhead Service
New York, N. Y.

The Construction News Service is furnished free to advertisers and their sales representatives, could also be furnished their agencies where desired.

◆

Wants Copy May Issue

"Our Educational Department would like to secure a copy of the May issue of your publication."

W. BRESLIN

Vice-Pres., The Byron G. Moon Co., Inc.
New York, N. Y.

May issue featured the work of the fifteen major textile trade associations, their growing importance.

A. B. Carter chats with "Cotton's" W. A. McGee . . . . . .

Below the Equator

"Perhaps you will remember the writer who called on you in the year 1929 down at your offices in Atlanta. At that time he and our weaving superintendent were enjoying a most instructive trip through the southern textile manufacturing zone of the U. S. A.

"Since then, by means of "Cotton", we have continued to keep in very close touch with what is being done in your country and, whilst we have never written to tell you of the very many kinks and ideas we have been able to adopt out of "Cotton", we are still most ardent enthusiasts in the matter of keeping our mill thoroughly up to date.

"We operate a jute spinning department, a sisal spinning department and a hemp spinning department and have a cordage mill for making sisal, manila and New Zealand hemp ropes.

"We operate a cotton spinning mill of some 52,000 spindles—a daily output of 25 tons of yarn per day—hence you will appreciate that we are on coarse counts.

"We operate about 500 duck looms, 400 of these being Northrops and a further 500 denim looms, all automatics.

"We also have a complete dye and finishing works and the latest up-to-date machinery for beam and package dyeing. Last but not least in connection with finishing, we have installed a super Sanforizer made by the Textile Finishing Machinery Co., of Providence. Here we would mention that we have the exclusive license for Sanforizing in the Argentine Republic."

R. M. FRASER

S. A. Fabrica Argentina de
Alpargatas
Buenos Aires

"We are in receipt of your last two letters referring to the difficulties which we are having concerning our excessive spinning band breakage.

"We wish to take this opportunity of thanking you for your cooperation in helping us with these problems which we have from time to time."

L. F. KEATING

Supt. Sudamtex
Buenos Aires

"We have received a request from Fabrica de Hilados y Tejidos del Hato of Medellin, Colombia, subscribers to your magazine, "Cotton", for a copy of your "Wall Chart on Shrinkage" as offered in your May 1938 issue of "Cotton".

J. B. STANTON

S. J. Brisbin Co.
New York, N. Y.

◆

On Mr. Cheatham

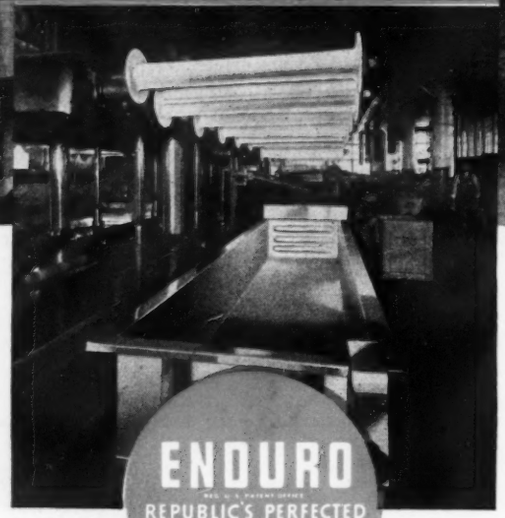
"This is a most interesting sketch and the [American Cotton Manufacturers] Association is to be congratulated in having a man of the character and integrity of Mr. Cheatham as President."

C. E. HUTCHISON

President,
American Yarn & Processing Co.
Mount Holly, N. C.

IN THE LABORATORY or...

..IN THE MILL



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AUG 18 1938

COTTON
SERVING THE
Textile Industries

August 1938 Vol. 102 No. 8

Some Thoughts on Repressive Taxation

FEDERAL TAXATION seems increasingly aimed at the deliberate repression of business activity. All forms of taxation impose a drag on commerce, but the drag is generally uniform. A 50,000-spindle mill should pay twice as much taxes as a comparable 25,000-spindle mill; a $50,000 inventory should pay twice as much tax as one of $25,000. Some of the Federal taxes, however, are not proportionate taxes, but increase in a sort of geometrical progression which discourages business in a more or less direct ratio to the speed with which the tax increases.

THE CAPITAL GAINS TAX is one of the latest examples of this type of repressive tax which discourages people from venturing their capital in business, but our old friend the Income Tax is an equal offender, although we have more or less become used to it. The income tax is particularly unfair to the business man who risks his money in trade, as compared with the salaried man who has a more or less steady and determinable income, or the investor who has his capital salted away in bonds, rental property, or something else which has a fairly constant return.

A man working on a salary of $25,000 a year will pay an annual Federal income tax of around $2300.00 to $2500.00, depending on his exemptions. As long as he makes $25,000 a year, he will know that he has that much tax to pay, and if he is a capable man his salary will not fluctuate nearly so much as the income of a man engaged in active business, employing capital. Over a four-year period, a $25,000 a year man would make $100,000 and pay roughly $10,000 in taxes.

It is a fortunate business man who can count on a reasonably steady income. In an industry like textiles, or in leather, furs and many other lines of business, there will frequently be a swing of as much as 50 per cent in the value of an inventory from year to year. Cotton goods will often vary this much. A business man, risking every cent he has, may over a four-year period make $100,000 and apparently be just as well off as the salaried man who got the same amount. However, due to the violent fluctuations of the business cycle, this man may have made $50,000 one year; nothing the next; lost $10,000 the third year, and made $60,000 in the fourth. There is nothing fantastic about such an example. Thousands of business men are up against just this sort of proposition, where they make big profits one year and perhaps nothing the other, and have to depend on averaging up over a period of years. This business man will therefore pay more than twice as much income tax in a four-year period as a salaried man with the same total income. In addition to this discrepancy, he is not allowed to claim as much for earned income as the salaried man, because, absurdly enough, he has had to risk some of his own money to get this income. The man who risks nothing except the loss of his job is entitled to a special deduction for earned income; whereas, another man, doing exactly the same work, and in addition risking his capital, is not allowed the same deduction.

THE SITUATION becomes even more drastic in the higher income brackets. A business man making $50,000 is at a relatively greater disadvantage when compared with a salaried man or investor on $50,000 than the man in the $25,000 class, and the bigger the income the worse the situation gets. The Federal Government is a partner in your profits, but has nothing except sympathy to offer when you lose.

It is small wonder, therefore, that people with capital to invest are more likely to stick it away in things that pay a small but practically assured return, rather than to venture it in some more hazardous enterprise which may yield a much bigger profit which taxes will trim down to the point where the risk of capital is not justified. People with big money have been more or less finding refuge in tax-exempt securities or other investments that offer a small return, with little or no risk.

The average run-of-the-street citizen who doesn't make enough to get into the clutches of the income tax has a fatuous sort of idea that income taxes are one form of exaction which cannot be passed on. This delusion is also held by a great many highly intelligent people who ought to know better, and the operations of the income tax have been defended by learned judges on the grounds of its fairness in only robbing those that were rich enough to be robbed. The income tax can, however, like practically all other taxes, be passed right on down the line to the consumer. In looking over lists of large salaries paid to corporation executives, it has probably puzzled many persons to see that some man is paid $86,350.00 a year, or $126,419.00 a year. The explanation in many instances is that in order to give a man a net salary of $50,000 a year, or $75,000 a year, or any other determined amount, it is necessary to figure out how much more than that he must be paid in order to have his desired salary left after income taxes are paid. In order to pay an executive a salary of $100,000 a year, it is necessary to actually give him about $165,000, so that he will have

$100,000 left after paying his Federal income tax, and of course there is the State income tax to figure in many states, and the corporation wishing to hire a $100,000 man may finally settle on offering him $186,400.00; the $86,400.00 representing the estimated income tax. The salaries of these executives are of course a part of the business expense of the concerns they work for, and are immediately added to the cost of the product manufactured or merchandised by the concern; that is, every penny of this tax is passed right on to the consumer in the price of his goods.

Any independent merchant or manufacturer, professional man, or other person who makes enough to pay a substantial amount of income tax has practically got to take that tax into consideration in pricing his goods or estimating the value of his services. After all, a man lives on his net income, and if he has an excessive amount of direct taxation on his gross income, he can only figure that he has made what is left over after paying the taxes.

THIS COUNTRY lives on business activity. A few generations ago most of the people lived on farms and could support themselves through their own efforts. It was a simple form of life which has been almost entirely replaced by an industrial system that lives almost exclusively on trade. Even the farmers cannot support themselves; but depend on cash crops for buying what they need from somebody else. Trade is carried on by individuals. Corporate bodies merely exist as convenient capital structures for permitting individuals to engage in trade. There is generally only one reason for anyone going into business, and that is the hope of making money. There may be other reasons for *staying* in business, but there is generally only one for originally *getting* into it. Anything that discourages people from embarking in business ventures is ultimately bad for business and bad for the country. Business can only live through continued activity, and the activity has to be stimulated by the possibility of profit. If the profit is taken out, the incentive is gone, and there is hardly anything better calculated to take out the profit than a pyramidal tax system which penalizes a man in direct proportion to his ability, energy and willingness to risk his capital.

This country was built up to where it is now by men with those qualities, and now our taxation system is increasingly sapping at them; discouraging progress and putting its blessing on mediocrity.

The theory behind the geometrically increasing income tax dates back to the pre-industrial period when great fortunes depended almost entirely on ownership, rather than activity. Huge estates were transmitted from generation to generation, and were added to merely through the weight of accumulated income. It was no doubt right to tax heavily such inactive wealth; to break up vast holdings which tended to multiply themselves inordinately, merely through natural increase.

However, in a country like ours, where there are such rapid changes in industry, and where the people as a whole have so much to gain through these changes, it seems unwise to maintain a tax system which deliberately squelches progress. The tremendous wealth of this country was created almost entirely by men who were willing to put the profits of their business back to work to create more business; to hire more people and pay more wages; to make more things better, and for less money. What comparison can there possibly be between a million dollars in the hands of a capable, aggressive, constructive and ambitious business man, and the same million dollars taxed away from that man and turned over to professional politicians to allot a little bit to Utopia, a little bit more to the millenium, some to deserving friends and relatives, a little bit to something sensible perhaps, and some to just plain graft? In the hands of a man who knows how to use it constructively and has proved by the very making of it that he knew how to use it constructively, a large sum of money can be a vitalizing force in the lives of thousands of people. In the hands of those who know only how to waste, rather than to create, this money is soon frittered away in futile expenditures that produce no lasting benefit to anyone.

"Vertical Integration in the Textile Industries"

The Industrial Research Department of the Wharton School of Finance and Commerce, University of Pennsylvania, in conjunction with The Textile Foundation, Inc., Washington, D. C., has published an excellent study entitled "Vertical Integration in the Textile Industries" showing the pros and cons of this important subject. Vertical integration is the grouping under a single management of the various steps in production, such as production of cloth, finishing, converting, and selling. The fundamental importance of integration is that it offers a possibility of co-ordinating the different processes to avoid misdirected production at the intermediate stages. Several case studies are made of integration in the garment field, fabrication of household textiles, industrial textiles, fabric and yarn manufacture, brand promotion, etc. Included in the studies of companies already having successful vertical integration are listed makers of men's clothing, rayon yarn and fabrics, tire companies, men's shirts, and makers of sheets and pillow cases. In the study, the school has taken no very definite stand in favor of vertical integration, but sees in partial integration something of a solution to the speculative element which is usually present in the various textile markets. Disparity in the scales of operations between successive stages of the production of an item, such as in the rayon fabric industries between yarn and fabric producing operations, or at the finished goods stage in most industries between fabrics and garment manufacture, is a formidable barrier, according to the report, but need not prevent vertical organization. The solution lies to some extent in integrating backward to make only a part of the output and continuing to sell the remainder. The book will prove especially helpful to the mill executive planning to integrate forward (finish, convert, or sell), and will be beneficial to a finisher, converter, or selling house planning backward integration (weaving the goods). This book is on sale at the offices of the Industrial Research Department, Wharton School of Finance, 3440 Walnut St., Philadelphia, Pa., for $1.50 per copy.

Gordon Cobb, Back from South America, Reports on

The Textile Industry of Brazil

• *F. Gordon Cobb, market counselor of* COTTON, *returned on July 15 from a trip to Brazil where, with his son, Joseph C. Cobb, he investigated textile manufacturing conditions in that country. In view of the tremendous interest in textile manufacturing and cotton growing in South America, in the light of the remarkable advances made along these lines in that country, we commissioned Mr. Cobb to make a report on his observations for our readers. Most of his time was spent in Sao Paulo, a state in Brazil, where progress in cotton cultivation and manufacture has been especially outstanding. We are glad to present here the first installment of Mr. Cobb's report, feeling that a first-hand account of South American developments, by a member of our staff, will be of special interest to our readers in this country. Mr. Cobb has written in a wholly informal style, giving personal sidelights and background along with a report of his observations along textile lines. The next installment will appear in an early issue—The Editor.*

By F. Gordon Cobb

Market Counselor of "Cotton (Serving the Textile Industries)"

WHEN IT WAS DECIDED definitely that Joe and I would go to South America, my editor gave me strict instructions to make copious notes of everything I saw, in order to report intelligently on the textile plants down there. I failed to follow his instructions as to making notes, but will endeavor to present an informal account of our observations. Let me warn the reader that, like the web coming from a card with the fibers in an entangled mass, this article will be rather rambling and without continuity, because I can tell my story better in that manner. Also, I hope that if I digress into the realm of personal experiences and general descriptions, these departures may be pardoned because I feel they are essential to a proper understanding of the conditions down there.

Sailing from New York City on June 4, on the Furness liner, *Southern Prince*, we were fourteen days on the water, reaching the famous port of Rio de Janeiro in Brazil on the evening of June 17, and disembarking the following morning. No words of mine are adequate to fully describe the beauty and attractiveness of this South American port. The marvelous, glamorous scenery and atmosphere of this lovely city provided a wonderful introduction to the country for us.

We had left the United States in summer, and landing in Rio, encountered chilly weather, since the seasons there are opposite to those in our own country. The avenue down which we drove to the Copacabana hotel, about a half an hour from the dock, was as fine a boulevard as you would see in any North American city. It parallels the beach, and on the opposite side there is practically a solid line of apartment buildings as modern as any you would see on New York's Riverside Drive or Chicago's Lake Shore Drive; in fact, the newest of the buildings might truly be classed as ultra-modern.

An American friend, who is now a resident of Brazil, picked us up on June 18, and we visited with him a firm comparable to the average textile mill supply house in the United States. The head of this firm kindly agreed to arrange visits to numerous cotton mills, large, small, new, and old, with one of his salesmen as escort; otherwise we would have had considerable trouble in getting to see the inside of the mills.

On Sunday, another American who is now a citizen of Brazil, took us for the day to his home, six or eight miles out from the city in a beautiful residential district, and after I have taken you through a few mills in this report, we will endeavor to return to this Sunday visit and tell you more in detail about the wonderful day we spent there.

We Visit Our First Mill

Monday morning, June 20, 6:00 o'clock: We were up at 5:00 o'clock to dress and get a bite of breakfast, and met in the hotel lobby the man who was to take us to our first South American cotton mill. Our escort explained that it was practically 30 kilometers (19 miles) to the plant. Soon we were off, and entered the mountains, and were told that we were on the road where two weeks previously, some international automobile races were held. The curves on some of these roads were so sharp that we felt like the car was either going to double up or run into its tail-light—and how in the world the automobile racers were able to stay on those roads at the speeds they made, we were unable to understand.

As we climbed the mountains, we caught glimpses of little villages down in the valleys and on the sides of the mountains; we saw groves of bananas, both wild and cultivated, also orange groves and grapefruit. Then we approached a beautiful town. All of the buildings looked as though they had recently been painted; the streets were as clean as any city streets we have ever seen. We saw a smoke-stack and naturally assumed we were coming to a cotton mill. "No, that is not a mill", and we passed on. Probably a half a mile further we saw a group of buildings that had the appearance of a large country club, surrounded by well-kept lawns, prolific with flowers, shrubbery, water fountains, etc.—and as we

turned off of the highway we heard the familiar sounds of cotton mill machinery. "Could this really be a cotton mill?"

We were met by the director of the mill, who is the manager, two of the masters, and the technical manager. The masters are equivalent to our overseers, and usually the technical man would be classed as our superintendent. Some of these men speak English, and one was assigned to each of us.

We went first to the opening room, where we found bales of about 70 kilos (385 pounds), most of them wrapped in a coarse cotton cloth instead of burlap. This mill makes mostly medium count numbers that are used for manufacturing goods for the interior trade, but they also make very fine numbers, up to 80s, for weaving high-grade fabrics used for everything from ladies' dress goods to men's shirts, both white and colored—the plant having its own bleaching and dyeing works.

We therefore found here cotton from 24/26 to 36/38 millimeters in staple length. South America uses the metric system, so it was necessary for us to transpose our mathematics. (Many natives looked at me in amazement when, in the hotels, stores, etc., I would pull out my old slide rule for quick calculation in paying bills, etc.) With practically 24 millimeters to the inch, this meant the cotton staple was between 1 and 1½-inch staple. However, I found out later, from Mr. Waddell, formerly of Charlotte, now Anderson, Clayton's representative in Sao Paulo, that the classification as to millimeters does not always mean the same thing in different sections of Brazil.

Some Manufacturing Details

The 24/26 millimeter cotton in this mill, equivalent to about our 1-inch cotton, is grown in the Sao Paulo or southern section of Brazil, and the cotton plant is similar to that we have in the States; that is, it must be planted each year. However, the 36/38 millimeter cotton, which is really cotton that does not run over 1⅜- or 1½-inch, is grown in northern Brazil, and is what they call tree cotton. That is, the cotton grows on trees which bear for 25 years, and there is no problem of re-planting the cotton each year. They do let grass grow under these trees in order to prevent dust getting on the cotton. The long staple cotton is very clean, and contains practically no foreign matter such as leaf, sand or particles of seed hull. Some of it does have the appearance of being ginned wet, and some bales have more little lumps or balls of curled-up, and, apparently, immature fibers.

In the opening room, we found English machinery (Platt's), somewhat similar to the opening machinery in the States. There were two processes of picking, and then on the cards we saw this long staple cotton being carded into a web that compared to practically any carding we have in the States. However, let me mention in passing, we saw both long staple and inch-cotton being carded in other mills that was full of nits. We will explain this as we come to it.

The drawing we saw is practically the same as ours. The sliver lap and ribbon lap machines appeared to be running perfectly. The combers, we were told, were taking out around 20 per cent, and they were certainly turning out a sliver as good as any sliver I have ever seen. Next came the slubbers, intermediates and fine frames and jack frames for 80s yarn and finer. In other words, the mill had two more processes for their 80s yarn and finer than you usually find in the more modern mills in the United States.

The spinning was running very nicely, though the front roll speeds were not up to what we consider standard in the United States. Joe called my attention to the fact that all of this machinery looked as though it had just come from the builders. It was the cleanest machinery I have ever seen in any mill—and that's covering quite a large territory. We saw several operatives with cans of cleaning material that they were applying to the polished parts of the machinery; for example, the heads of all the frames were so shiny that you could almost use them as mirrors. There was no lint or bobbins on the floor; there was no accumulated lint on the machines.

I did not see even one place where any operatives had spit on the floor; nor did I see any cuspidors or spittoons for them to use. The operatives were clean and their clothes were clean. Both Joe and I marveled at the cleanlinss of everything we saw: machinery, floors, operatives, everything.

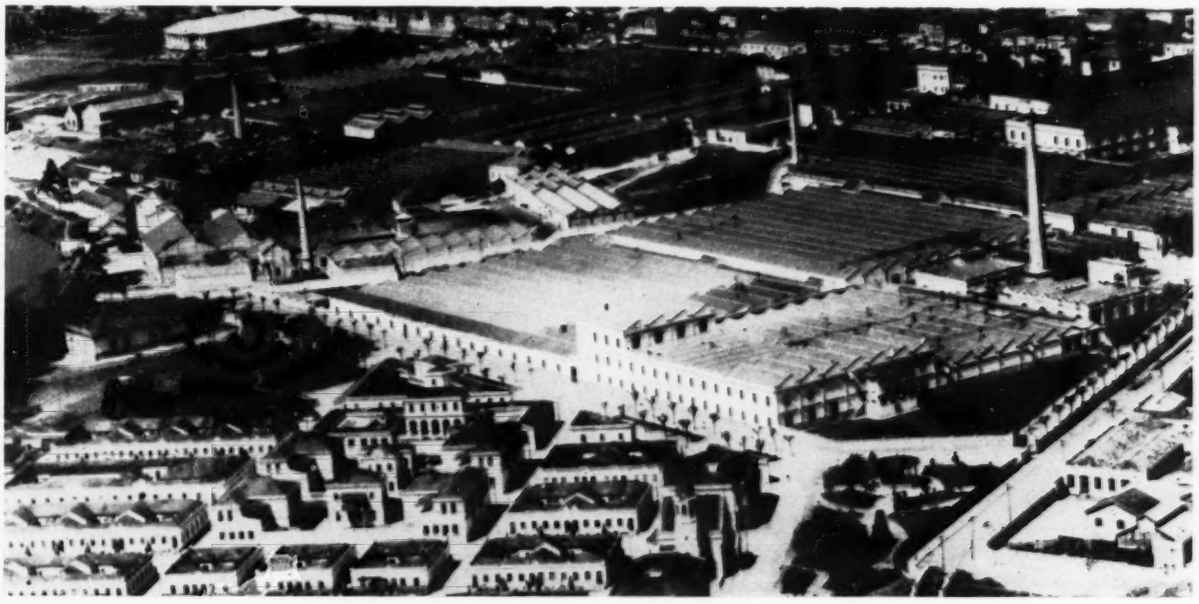
To sum up: we had seen so far good preparatory machinery, and the stock well prepared for good picking and what seemed to be a good even lap, as good carding as we have ever seen in any mill—and this applies to all of the processes through the carding and spinning. Joe said, "Dad, pinch me to see if I am dreaming."

Joe Meets an Old Friend

We next passed on to the weaving, bidding the Technico de Fiacao goodbye, as we were leaving his department. As soon as we were introduced to the weaving master, he turned to Joe and asked, "Weren't you at N. C. State College in 1925?" and of course Joe replied, "Yes", and, immediately added, "Why, Mr. Mullinax, you were my instructor in weaving at State College!" A small world, after all.

Knowing Joe, Mr. Mullinax took particular interest in showing us his different patterns, as well as the weave room. The looms are all English-type, known to us old fellows in the States as the bat-wing pick motion. Mr. Mullinax showed us patterns in his weave room that were made of as fine yarns, both single and ply, and as finely woven, as anything we have seen anywhere. Naturally Joe and I were getting the surprise of our lives in seeing such a wonderful plant in South America. We had had an idea that South American textiles would be much below the standard of textiles in the States. We are now frank to say that from what we have seen, their mills compare favorably with the very best mills in the States.

Mr. Mullinax bade us goodbye, and we were joined by the Technico da Cia Progresso Industrio do



Aerial view of a Brazilian textile mill, brought back by Mr. Cobb . . .

Brazil—who corresponds to a mill manager in the States. He explained to me that he did not speak very good English, but it did not take me long to find out that he understood perfectly everything I had to say. He and I walked through the bleachery together, and, from what I know about bleaching, it seemed to be as up-to-date in equipment as the bleacheries I have seen in the States.

There was a modern Sanforizing machine; the tenters and other equipment were up-to-date in every respect. The only difference I noted was that the cleanliness was far ahead of anything I have seen elsewhere.

Mr. Soldato—the director—explained, in answer to my surprised look, at this modern equipment, that he sets aside a thousand cantos ($50,000) a year, for the replacement of old machines. (Mill presidents, superintendents and managers in the United States, please take notice.) He also sets aside quite a large sum for general improvements throughout his plant.

The operatives we saw in this plant are rather small of stature, in comparison with the female operatives in the States, and these operatives do not run as many machines as the operatives in our mills. However, the spinners and fly frame hands seemed to be very efficient in their work, and, as explained, they keep their machinery spotlessly clean. If a piece of cotton so small that it would not be noticed by an operative in the States, falls on the floor, the South American operative is after that piece of cotton at once.

Although we did not see sweepers in abundance, we did not see a dirty floor anywhere. The natives of Brazil might be classed as a mixed race, that is, without definite information along this line, our impressions were that we did not see any people who seemed to run true to any type. We did not see true Spaniards or Italians, or any other race. What we saw seemed to be a mixture of Italian, Spaniard, Creole, and the other darker races. Although we did not see any blacks on this visit, we were told there is no color line, and that blacks, browns, yellows and what-have-you may all work together. But let me explain that a negro in Brazil is not a negro as we think of him in the United States.

The average pay for a good operative seems to be from 8 to 10 millreis per day (40 or 50 cents). But readers in the United States must not jump to conclusions too quickly, as I can later explain that this seemingly low wage is not such a low wage, comparatively speaking, as the impression you may have when you make a direct comparison with the United States wages.

Cotton Growing in Sao Paulo

After this description of our first cotton mill visit, let me now give a little information about this wonderful country. Although we landed at Rio de Janeiro, it was Sao Paulo and the surrounding country, with a great many cotton mills and much cotton growing, that we were most interested in.

Sao Paulo is the name of a city and also the name of a state, and it is one of the most important states of the union. Its exports and imports approximate half the total for Brazil. The most important crop is coffee. In fact, Santos, the port for Sao Paulo, is the largest shipping port for coffee in the world.

Sao Paulo is on a huge plateau averaging about 2,000 feet above sea level. This is why the climate of Sao Paulo is so moderate in winter and not very hot in the summer—that is, compared with the United States. The average temperature at Sao Paulo City is around 64 degrees F.; the maximum does not average over 85 degrees.

Although the original cotton in South America was produced on perennial trees, more than 50 years ago, annual cotton seed was introduced into this territory several years later. Most of this seed came from Texas; this is the plant that produces the 7/8 to 1 1/16-inch cotton, of which large quantities are grown in Sao Paulo; and the acreage is being increased rapidly.

(Continued on page 55.)

Principles of Designing
DOUBLE SHUTTLE PLUSH

By Osbert Hughes

MILL EXECUTIVES, weavers and practical designers will all be interested in this comprehensive discussion of double shuttle plush. It tells how these fabrics are woven, the effects produced, the possibilities of this type of cloth, and gives some helpful and practical suggestions on the development, weaving and designing of plush . . .

IN RECENT YEARS there has been a considerable increase in the number of mills engaged in manufacturing plush on double-shuttle looms. This is particularly true in the South. The double-shuttle loom was originally developed in Germany but it is now being made by American loom builders also.

As there appears to be a dearth of adequate literature on this subject, the author of this article hopes that the few suggestions offered will be of assistance to students, as well as to designers and weavers of this class of goods.

The principles of double-shuttle plush looms are far more intricate than those of plain looms; it is advisable, therefore, for one to become familiar with

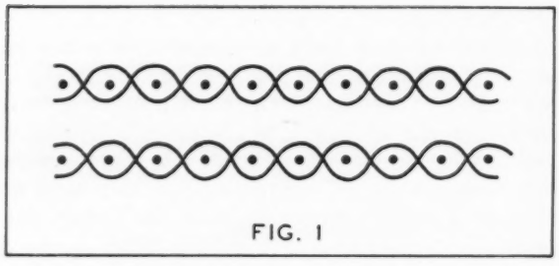


FIG. 1

ordinary weaving before attempting the designing of plush. Double-shuttle looms are used for weaving plain mohair fabrics for automobile and furniture upholstery, and for cotton, cotton-and-rayon, and cotton-and-other-fiber piece-dyed fabrics, and yarn-dyed plush. Its chief uses are for upholstery, drapery, dress goods, casket cloth, etc. With the addition of a dobby or Jacquard, a wide variety of effects in both color and weaves may be produced. Before going into the methods of designing for plush, a few words concerning the operation of the double-shuttle plush loom may not be amiss.

Operation of Double-Shuttle Loom

Two pieces of cloth are woven at the same time, one above the other, on a double-shuttle plush loom. This is accomplished by two shuttles which are thrown together, one above the other, and two body warps that are controlled by harness frames. The lower shuttle rides the lay in the regular manner of plain weaving and the upper shuttle rides on the warp. The body warp has two sheds, one for each fabric, and at no time does an end of this warp pass from one fabric to the other. The pile is formed by the pile warp which travels back and forth between the two fabrics and is cut apart by a knife attachment which operates simultaneously with the movements of the shuttles. Plain weave, 1 up and 1 down, is commonly used as the basic weave of each fabric; Fig. 1 shows the relative positions of the top and bottom pieces without the additional pile warp. The two weaves chiefly used as pile are the *V* weave, shown at Fig. 2, and the *W* weave, shown at Fig. 3. Of these, the *W* weave makes the better and firmer fabric but it requires more picks per inch than the *V* weave. A side view of the structure of plush is shown at Fig. 4.

Upon examination of a piece of plain plush, it will be noted that the body warp and filling are entirely invisible from the face, being buried by the depth of the pile. Plain plush, whether made of cotton, rayon, mohair, or other fiber, is usually woven in the gray and later piece-dyed. Yarn-dyed plush is usually based on a black body warp and black filling. However, by using a colored filling to blend with the pile warp effect, a more harmonious and pleasing color effect is obtained. Black filling does tend to "dirty" lighter colors, even in plush.

An interesting piece of plain cotton plush is illus-

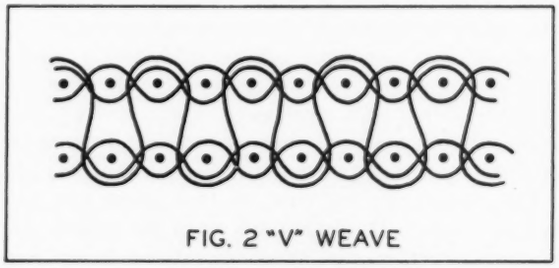


FIG. 2 "V" WEAVE

trated in Fig. 5. The pile is striped in three shades of the same color, the indistinct effect being obtained by an ingenious method of drawing-in the pile warp. The weaving particulars are as follows:

Body warp, 30 ends per inch, 20s/2 black; pile warp, 30 ends per inch 12s/2, in three colors. These warps are placed upon two loom beams, therefore the body warp beam contains 3,240 ends and the pile warp beam contains 1,620 ends. The selvages are extra and may be placed upon the body warp beam. The weave used for the body warp is plain, 1 up and 1 down, the *V* weave being used for the pile. About 36 picks per inch of 20s/2 gold filling are used. The indistinct stripe effect is secured as follows: The pile warp is laid-in 1 end light brown, 1 end medium brown, 1 end dark brown, throughout. Two pile ends are drawn through each heddle eye and it is the roll-

ing of these two ends over each other that produces the pleasing shaded effect. If each pile end were drawn through a separate heddle, a distinct stripe would result. This fabric, woven in a correct color line, is very acceptable as an upholstery for furniture.

Designing Entirely Different

Designing for Jacquard double-shuttle looms presents an entirely new set of problems to a designer who has only worked on flat goods. The designs vary according to the type of Jacquard machine in use and the manner in which it is tied up. Some mills have their own methods of rigging Jacquards; however, in this article an outline will be given of what may be considered standard practice only. Almost every type of Jacquard will be found in use for plush weaving. It is obvious that an extra high shed is necessary to permit the passage of the two shuttles through the warp. The type of Jacquard used will also affect the weaving qualities of certain designs; for instance, when a single-lift, double-lift, or rise-and-fall machine is used, the portion of pile warp not appearing on the face of the goods, as pile, will float loosely on the back of the bottom piece. These floats should not be left longer than 5 inches at the most. Thus, the necessity of bringing up each warp as pile at regular intervals on the face will modify the type of pattern that can be used. Also, only a *V* weave can be obtained when using these Jacquards.

The usual set-up of the loom is to have the body warp on harness frames working the plain weave. The pile warp is controlled by the Jacquard. The simplest form of cotton upholstery plush, often referred to as "two-tone," is made in this manner. Only one color of pile warp is used, the figured effect being formed

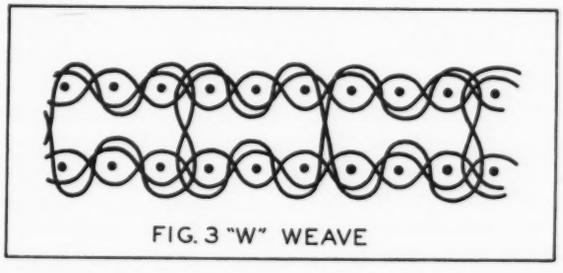


FIG. 3 "W" WEAVE

by pile figures on a sunken or depression ground. This depression effect is formed by the body warp and the filling only; the weave is 1 up and 1 down, plain, and the pile warp ends are dropped to the back of the bottom fabric. A design for this fabric should be painted upon point paper in this manner:

The paper is laid out for the number of hooks used in the width of the repeat and one-half the number of lines as there are picks in the length of the repeat. The pile effect is indicated in solid color paint, say red, and the depression is left as white. The card stamper cuts two cards from each line. The card cutting instructions are for first card, cut red, miss paper; second card, miss red and paper (blank card).

When the capacity of the Jacquard permits, this fabric can be elaborated to use two or more colored pile warps. Frequently this is done by using cotton yarn and rayon, the goods being woven in the gray and then piece-dyed. A rich two-toned fabric is obtained in this manner. Each section of warp color is often called a "frame," a term used in the carpet industry. Thus, a fabric having two colors of warp is called a two-frame job, three colors a three-frame job, etc. One frame may contain several colors, as a plant warp, but it is still spoken of as two-, three-, or four-frame as the case may be. For a two-frame job, if an ordinary straight tie is used, one color of pile warp should be placed upon the odd hooks and the other upon the even hooks. Three effects of pile can be obtained, each color straight and a mixture of both, as well as the depression effect. The point paper design is made upon one-half the number of hooks in the repeat, and one-half the number of lines as there are picks in the repeat. Two cards are cut from each line. One pile effect can be painted red, the other blue, mixture yellow, depression left paper. Cutting instructions are: first card, cut red on odd hooks, blue on even hooks, yellow on both odds and evens, miss paper; second card, miss red, blue, yellow, paper (blank card). If a section tie is used, each pile warp is cut upon its proper section of card as listed here. The same principles of card cuttings will apply to

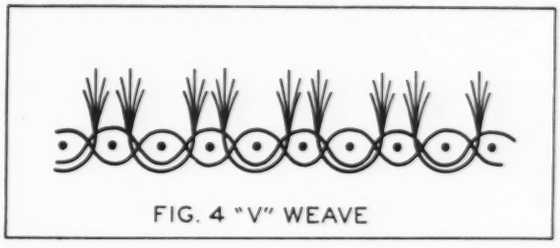


FIG. 4 "V" WEAVE

three- and four-frame plush also, both on straight and section ties.

The best Jacquard for use on double-shuttle looms is the type employing the stationary griffe, especially built for these looms. This machine gives the designer full scope as to the disposition he makes of each warp thread of pile warp. Also, the unused pile warp, instead of floating loose on the back and thereby being wasted, can be stitched into the body of the cloth and thus increase both its weight and firmness. Again, various fancy weaves, using the pile warp threads but not as pile, can be introduced into the ground or depression effect. This Jacquard has two sets of knives, one stationary and one movable. The two cylinders move in simultaneously instead of alternately as on an ordinary Jacquard. This arrangement permits three dispositions of the pile warp. It can be raised, dropped, or left in the center. A study of the diagram showing the *W* weave, Fig. 3, will show these various positions, though either a *V* or *W* weave may be used on this machine. It is absolutely essential that the two fabrics, top and bottom, are equal in weight, therefore the same amount of pile warp should be stitched into each. This is readily done on a two-frame fabric by stitching in one frame on the top piece, the other on the bottom. On a three-frame fabric, one frame should be placed on each piece, the third divided between the two pieces. On a four-frame job, two frames should be stitched in on each piece.

A two-frame fabric made with a plush stationary griffe Jacquard should be designed in the following manner: The point paper design is laid out for one-half the number of hooks in the repeat, and one-half the number of lines as there are picks in the repeat. Four cards are cut from each line, two for each cylinder. It should be noted that the cards for each cylinder are laced in opposite directions so that the same number card is presented on both cylinders at the same time. The effects can be painted, one pile warp red, the other blue; mixture of pile, yellow; depression, paper. Cutting instructions are: First card, movable side: cut red on odd hooks, cut blue and paper on even hooks, cut yellow on both odd and even hooks. Second card, movable side: cut red and paper on even hooks. First card, stationary side: cut red on even hooks; second card, stationary side: cut blue on odd hooks.

An elaboration of the foregoing, a three-frame fabric, is extensively used with a pattern 27 inches square. This square is used to upholster cushions on living room furniture, the remainder of the upholstery is usually plain mohair plush or frieze. Rayon is often used as pile warp in one frame. A repeat of this size requires a 624-hook Jacquard with a point tie, or either a double 624 or a fine-index Jacquard with a straight tie. One-half of the hooks are devoted to the pile warps used as the ground of the pattern. One-fourth are used as the running color of pile, and one-fourth as the plant colors of pile. It is essential that all warp stitchings be done so as to keep both top and bottom pieces of equal weight. A further color effect may be introduced by a plant in the body warp, this being allowed to appear on the face of the fabric by a judicious use of the depression effect.

In closing, it may be noted that the possibilities of the double-shuttle plush loom, especially in combination with a plush stationary griffe Jacquard, have never been fully exploited. A designer working on these looms will find plenty of room for his ingenuity in devising new weaves and effects. All of these enrich the appearance of the fabric, increase its salability, and thus help to keep the looms running on a full-time basis.

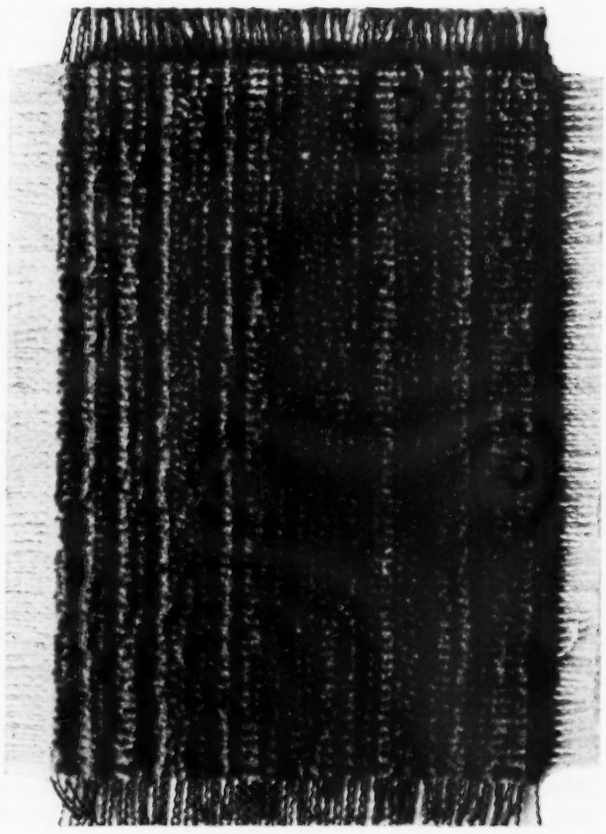


Fig. 5. The pile is striped in three shades.

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Meat Shipped in Cotton Cloth

A new process of wrapping meat in cloth for shipping, developed by Swift & Company, is expected to create a new market for cotton that will require annually 20 million yards of cotton muslin, according to reports from officials of Swift & Company. After experimenting with the process for two or three years, the company has permanently adopted the method of enclosing veal in cotton cloth for shipping from meat packing plant to retailer. More than 8 million yards of the specially prepared cotton muslin were used by Swift & Company in 1937, officials of the company said. The wrapping of cotton cloth is placed on the dressed veal at the packing plant. Outside the cloth the veal is wrapped in a layer of waxed paper and another layer of paper. The process permits dressing the veal in the packing plant before shipping, where formerly it was shipped in the skin. The cloth has been found to help preserve the meat because it prevents collection of moisture and prevents the meat from becoming sticky.

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In July Textile Research

The results of a study of the resiliency, density and filling capacity of various plant fibers used as filling materials by upholsterers is one of the features of the July issue of *Textile Research*, the monthly bulletin of U. S. Institute for Textile Research. Also described by the author, Brittain D. Robinson, agronomist, Bureau of Plant Industry, U. S. Dept. of Agriculture, are the testing methods employed.

"Some Production and Biological Aspects of Cotton Quality," by H. W. Barre of the Bureau of Plant Industry, U. S. D. A., is the second of a series of four papers descriptive of the work and findings of the Federal-State cotton research program that is being conducted by several bureaus of the U. S. Dept. of Agriculture. It will be followed in the August issue by a paper on the use of X-ray methods for measuring cotton strength by Carl M. Conrad and Earl E. Berkley, and in the September issue with Dr. Enoch Karrer's paper on "Cross-sectional and Related Structural Features of Cotton Influencing Quality."

Two reports of the exhaustive Textile Foundation study on Fundamental Properties of Textile Wastes appear in the July issue: One on "Flotation from Ferric Oxide Sols," by B. Reid Clanton, and another by Dr. James E. Magoffin and H. Temple Hatch on "Electrophoresis of Platinum and Gold Hydrosols." Laboratory work on this study is being conducted at the University of North Carolina under the direction of Dr. Frank K. Cameron, and experimental work at a plant in Greensboro, N. C.

Lining Loom Batteries with Guages

By Spencer Hall

A CARD GRINDER believes that his job determines the quality of yarn. A slasher tender believes that his job is the bottle neck of the mill. I believe that the lining of a loom hopper stand with gauges is a necessary function of the weave room.

Maybe I have this opinion because, like all the others that believe their jobs are important, this lining of hopper stands was my job in the old days. Then too, as a burned child is afraid of fire, I had an experience that cured me of putting on the hopper stands in any way but the proper one, and later in this discussion the reader may think that a man lining hopper stands for me must go to a lot of trouble, but I have always held that it paid dividends.

Once I had a weave room wherein all of the looms had had the batteries lined. The looms were equipped with feelers and were on the single change. Efficiency and quality were considerably lower on one side of the room than on the other. Upon investigation it developed that a high percentage of the loom stoppage was caused by filling breaking on the filling transfer. For a while the quality of the filling was questioned—but this probability was eliminated as all of the looms in the room were on practically the same type of goods and the trouble was occurring on only about 20 per cent of the looms. These looms were checked thoroughly and we found that the batteries on nearly 200 looms were too far to the front of the loom. In other words, the batteries were too far from the lays, horizontally.

There is no doubt but that they were lined with the full side of the eccentric pin to the front, which brought the lay as far forward as possible. These looms probably did not begin to give trouble until the pitman arms wore and there was no way to move the lay farther to the front to be in position under the battery for the filling change. Some of the pitman arms had been changed after they were worn only slightly.

The hopper stands on these looms were re-lined, thus eliminating the trouble. This episode of the improperly lined batteries was even more outstanding because the looms were on the single change, but even if they had been on the double change, plenty of trouble would have been encountered.

The filling change motion is most important, and in any weave room it should be kept in as nearly perfect condition as possible, regardless of the type of goods being made. The settings should be just as accurate on bag cloth and print cloth as on quality satins and Jacquard bedspreads. This motion, being delicate in construction, and usually operating at high speeds, has many *little things* happening in connection with its operation that prove to be detrimental to our ultimate goal of high quality, high efficiency, and low cost. Such factors as breaking filling on the change, cutting the shuttle, dropping bobbins, hanging bobbins, rolling bobbins in the shuttle, failure of bobbin to fit into all grooves of the shuttle spring—and breakouts, seem insignificant when taken separately, but even a few instances of all of these occurring will prove costly.

In many cases the previously mentioned factors are caused by the battery not being lined properly. The transfer may be set correctly, but if the hopper stand is out of line, the loom is sure to give trouble.

Before lining the hopper stand, it is necessary that the loom be *built-up* first so that the lining will be correct. These remarks will be confined to the lining of the hopper stand on the Draper E Model loom using the short shuttle (shuttle carrying the 7⅜-inch quill), but many of the points discussed will apply to other models of looms also. The gauges referred to are standard.

Assuming that the hopper stand has been broken and is to be replaced, the cloth must be cut in front of the reed, the reed removed from the lay, and the cloth and reed laid back over or against the harness. A new reed is then placed in the lay; this is done because the reed in the loom may have been warped, which prevents accuracy in lining the battery, squaring the reed, etc., and the warp yarn in the reed prevents the gauges being used accurately.

Then the loom should be built-up to the battery so that the use of the gauges will give an accurate setting of the hopper stand. There are eight steps that should be followed through in building-up the loom to the battery.

1. The rocker shaft should be inspected and if it is worn, it should be turned or replaced. The rocker shaft bearings should be inspected and replaced if there is sufficient wear in them. Then they should be fixed to the loom with two dowel pins, complementary to the bolts holding the bearing to the loom side. In other words, there should be no play between the rockershaft and its bearings.

2. The bottom of the lay should be flush with the shoulders on the swords, on which it rests. That is, the lay must fit tightly and flush with the shoulders on the sword, touching the entire length of the shoulders so as to hold the swords perpendicular to the lay. If the swords are not perpendicular to the lay, the lay may become warped—most certainly an undesirable condition. The lay may be placed flush with the shoulders on the sword by loosening the swords on the rocker shaft, loosening the bolts that fasten the lay to the swords, and moving the swords at the bottom (on the rocker shaft) until there is no space between the lay and the sword shoulders.

3. The center of the lay must now be brought into line with the center of the breast beam. The center

Gives Excellent Suggestions for Building Up the Loom Prior to Lining . . . . . .

of each is ascertained by measuring and is marked, then a gauge that is angled on one end to fit the lay and bladed on the other is used to check the points. The center of each should be in line with the gauge when the angled section is placed on the lay with its outer edge flush with the mark indicating the breast beam center. If the points are not in line, it is necessary to move the lay until they are in line; this is accomplished by loosening the swords on the rocker shaft and moving them on the shaft until the lay is in the desired position. After moving the lay, it is important that all end-play, or side-wise movement of the lay be eliminated by tightening the sword setscrews on the rocker shaft, placing the rocker shaft collars against the bearing, and pressing the picker feet against the bearing. Also, there should be no lost motion between the sword clamp and the lay guide.

4. Next replace the old pitman arms with new ones if they are worn. This is of vital import to the operation of the filling change motion because it will add to the amount of adjustment of the lay in regard to its position under the transfer, and the new arms can be kept tight so as to prevent vibration of the lay. The eccentric pins connecting the pitman arms to the swords should be inspected and changed if they are worn.

5. Inspect the crankshaft and its bearings for play or lost motion. If there is any, then either the shaft, the boxes, or both should be replaced because any play in these parts will cause the transfer to have a different setting other than the one the fixer gives it.

6. Now everything has been done to hold the lay in its correct position under the battery without any movement or play from lost motion. The lay has been steadied. The next step is to steady the battery foundation, which is the breast beam, to prevent any false movement of the battery during the filling change. This is done by fastening the breast beam to the loom side with a ¼-inch dowel pin, which extends through both of them.

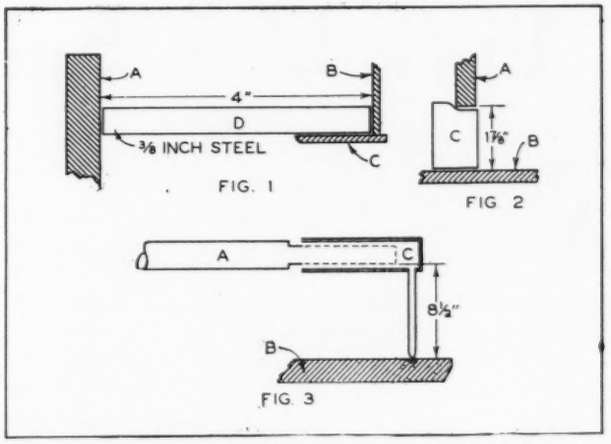
7. The raceboard should be checked to see that it is in good condition and that it is level from end to end. The lining of the end lay plates should also be checked because later the battery will be positioned from the end lay plate on the right hand side of the loom. It is essential that the reed be square with the raceboard for the same reason.

8. The right hand heel strap and heel spring play an important part in the filling change. The strap must not be broken and the spring must be neither weak nor broken nor too strong. The heel strap or spring being broken or not functioning properly will sometimes cause the hopper stand to be broken by the picker stick.

Lining the Battery

As stated previously, the cloth has been cut and laid back across the harness, and a new reed for lining purposes has been inserted.

The first gauge to be used in lining the hopper stand is a piece of square ⅜-inch steel, four inches long. This is used to place the lay in its proper position from the front of the loom and is done by placing the crank shaft on front center and placing the gauge



between the back box and the upright portion of the loom side, to which the breast beam is connected, Fig. 1. This distance should be four inches and if found to be other than that, the eccentric pins in the sword (at the pitman arms) are turned to correct the position of the lay. [Note: It should be remembered that the lay must be the same distance from the breast beam on each side of the loom, so when making adjustments for the proper distance, the same adjustment should be made on the opposite side of the loom if necessary.]

The hopper stand is then placed on the breast beam in its approximate position and the lay is moved back under the bobbin stop. The vertical distance between the hopper stand and the end lay plate is now checked at two points: from the bottom of the stationary disc to the center of the end lay in front of the picker stick slot, and from the end of the battery stud to the back of the end lay plate. The gauge used for the former setting is of angled steel with a height of 1⅞-inches. The top of the gauge is tapered by 1/16-inch which is equivalent to a shoulder of this dimension. The gauge is placed on the end lay plate and moved under the hopper stand disc until it fits firmly between the two points, which places the hopper stand 1⅞ inches above the end lay plate, Fig. 2.

The distance between the battery stud and end lay plate, which should be 8½ inches, is obtained by use of a gauge consisting of a shell to fit over the battery stud and a rod 8½ inches long, extending to the end lay plate. If the distances mentioned in this paragraph and the preceding one are found to be greater than the lengths or heights of the gauges, the shoulders on the breast beam are filed, which will in turn lower the hopper stand at these points. Care must be exercised in filing the shoulders as any one shoulder filed more than the others may cause the hopper stand to be unsteady, thus preventing the correct lining of the stand.

Next, the hopper stand must be lined horizontally with the end lay plate. Here a flat steel gauge with a shoulder is used; the shoulder is placed against the inside of the stationary disc (the side toward the back of the end lay plate) and extends 12¾ inches toward the back or extreme end of the end lay plate. The hopper stand is placed in a position so that the end of the gauge, when resting against the stationary disc, is even with the back end of end lay plate, Fig. 4.

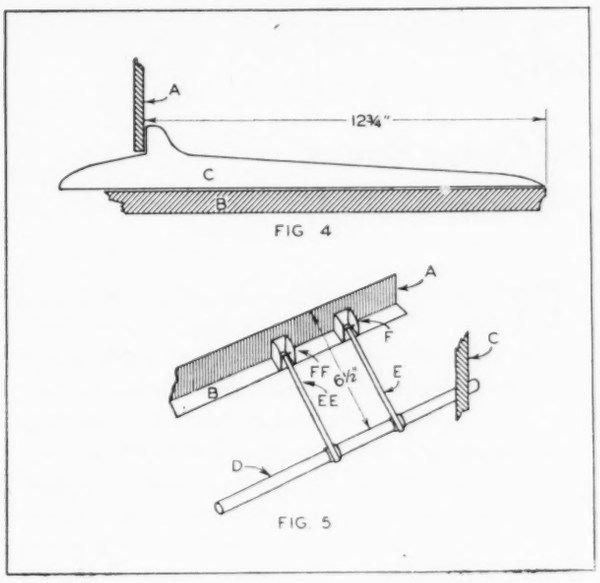


FIG 4

FIG. 5

The battery is then lined to the reed, which gives it the proper position from front to back of the loom, and also places the bobbins in the battery so that they are parallel with the bobbin in the shuttle. The gauge for this purpose consists of a 24-inch rod which is placed in the hole that takes the transfer stud, and extends out in front of the reed. On this rod are placed two movable arms, 6½ inches long, extending toward the reed, each having fastened to it a right-angled slide, two inches square, to fit against the raceboard and reed, Fig. 5. The crank shaft is placed on front center and these gauges are moved back and forth against the reed, being kept about 6 or 8 inches apart. During this operation the hopper stand is kept bolted fairly tight so as to prevent loss of other adjustments already made, and the base of the stand is tapped lightly with a hammer to make the necessary setting of the hopper stand to the reed. When the hopper stand is in its proper position in relation to the reed, the gauges will not bind at any place on the reed or raceboard when they are moved back and forth. The amount of pressure should be the same along the reed at all places.

After completing this step the hopper stand should be pinned to the breast beam with two ⅜-inch dowel pins so that it will not move even should the bolts come loose. The lining of the hopper stand being complete, the battery parts must be assembled and the transfer set, but as this is not a part of the lining operation, there is no need to discuss this.

Time ambles on; the chariot is outmoded. The old days of seeing a loom fixer push a loose hopper stand back out of the alley and tighten it down are gone; the battery gauges are with us to stay—but didn't I see somewhere that the old chariot races are being revived.

Gordon Cobb Reports on The Textile Industry of Brazil

(Continued from page 49.)

As the seasons are opposite here to those in the United States, cotton planting in the state of Sao Paulo generally begins during the month of September, because if planted later, the plants are liable to attacks of a pest known as "coruquere", or is liable to be attacked by a kind of caterpillar before it has a chance to bloom and boll.

Picking generally takes place from March to June. However, some of the very early planting allows picking to start in February, especially if there has been a dry season. In the whole of Sao Paulo, only annual varieties are permitted to be planted by law. The government is doing a wonderful work toward cotton seed breeding by having government farms in different sections of the state. Formerly there were as many as 70 varieties; these are being gradually reduced in an effort to get down to a few standard varieties.

The Texas Big Boll variety has a length of staple of only about 29 millimeters, and, as stated, practically all of the cottons produced in this state are from American annual types, and it takes about six months from planting to ripening of the boll, whereas, in the United States, it takes, I believe, about five months. However, as Sao Paulo has never had any boll weevils, it has been found best to produce a slow maturing variety, which they have found produces a better quality of staple. Studying a table showing the length of Sao Paulo cotton, we found it to be very regular, with the greater percentage between 20 to 30 millimeters in length. The Sao Paulo cotton we saw in the mills confirms these government reports, and both Joe and I were surprised to find the staple so even running, and the cotton averaging, we believe, freer from foreign matter, especially heavy foreign matter like sand. We found American Government samples in one cotton broker's office, and as he also had numerous samples of local cotton it gave us an excellent chance to make actual comparisons from these samples.

Please understand that these remarks concern Sao Paulo or southern Brazilian cotton, and do not apply to the long staple cottons grown on trees in northern Brazil. The long staples from tree cotton are not so even running, and they vary considerably from one section to the other—but it is very clean and practically free of foreign matter.

(Space limitations require that we interrupt the story at this point. In the next installment, Mr. Cobb will continue his description of cotton cultivation in Brazil, and will give us further details concerning another mill he visited, as well as some general information on the textile industry of the country as a whole, its practices, etc.

Sao Paula, where Mr. Cobb spent most of his time while in Brazil, is the most important state in Brazil. Its chief industry is coffee, but it has advanced to a great degree not only in cotton growing, but in textile manufacturing as well. In the state of Sao Paulo, there are 113 cotton mills, containing 814,450 spindles and 25,683 looms, which consume approximately 150,000 bales annually of the 1,000,000 bales grown in this state. Some of the mills utilize rayon as well as cotton.

In addition to the cotton weaving industry, there are 133 knitting mills in Sao Paulo, with 3,353 knititng machines, of various types, employing nearly 5,000 workers.—The Editors.)

The Basic Yarn Formula

And the Relation of All Cotton Roving and Yarn Calculations to this Formula

By Horace L. Pratt & J. Emery Nash

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(Article 2)

THIS is the second article of a series explaining the use of the basic yarn formula, and the proper relation of each derivation of the formula, without having to refer to special formulas for calculating weight, length, and count. The first article, on page 52 of the July issue, showed the development of the basic yarn formula and its use. This article shows how constants may be figured by using the basic yarn formula. A copy of the first article may be secured upon request . . . . . .

IN THE PERFORMING of various calculations throughout the mill it has been found profitable to shorten the calculations as much as possible from the standpoint of accuracy, as well as for the saving of time. Thus we have *constants* for twist, draft, production, and cost, which are familiar to the textile man. We also have constants to shorten yarn calculations, though they are not generally recognized as such. In non-technical language a *constant* might be defined as a partly performed problem, containing all the elements of the equation except those subject to change.

In the derivation and use of constants the following bit of information may prove helpful:

1. Unknown or variable in numerator:

(a) Constant × unknown variable = Quantity,

$$\text{(b) Unknown variable} = \frac{\text{Quantity}}{\text{Constant}}$$

2. Unknown or variable in denominator:

$$\text{(a)} \quad \frac{\text{Constant}}{\text{Unknown variable}} = \text{Quantity}$$

$$\text{(b)} \quad \frac{\text{Constant}}{\text{Quantity}} = \text{Unknown or variable}$$

It will be found that all the yarn constants, as used in this series, belong to the second group, with the unknown in the denominator.

Knowledge of Basic Formula Necessary

All cotton roving and yarn calculations are based upon the *basic yarn formula*, as was stressed in Article I of this series on page 52 of the July issue. The necessity for a working knowledge of this formula, by the student or mill man, cannot be over-emphasized. For certain problems, especially those dealing with the weights of yarn in bulk, as on beams or spools, it is probably safer for the beginner, at least, to use the entire *basic yarn formula* in attempting their solution. But for the finding of the counts of yarn, when short lengths are measured and weighed in grains, or for finding the weight in grains, when counts are known, a constant is usually employed.

Reference to any yarn table will show that 120 yards, or one skein of yarn weighing 100 grains sizes 10s yarn. Suppose we check these figures by the formula and see for ourselves whether this is correct. Substituting the 120 yards and the 100 grains in the formula, we have,

$$\frac{120 \text{ yards} \times 7000 \text{ grains (Unit of weight)}}{100 \text{ grs. (wt. of 120 yds.)} \times 840 \times (y) \text{ counts}} = 1$$

Solve for (y):

$$y = \frac{120 \text{ yds.} \times 7000 \text{ grs.}}{100 \text{ grs.} \times 840}$$

$$y = 10\text{s}$$

We, too, find the result to be 10s yarn, but the process of figuring the problem is rather long.

In the mill it is customary to reel a certain yardage of roving and yarn daily for test purposes. For most single yarns and the finer ply yarns 120 yards, or one skein, will be reeled. For the heavier yarns possibly 60 yards will be reeled, and the weight doubled to show what 120 yards would have weighed. In sizing roving 12 yards are usually reeled and weighed. Sometimes when matching samples it is not convenient to use either of these lengths, in which case it is necessary to calculate on a single yard basis. For these lengths the following constants have been worked out:

120 yards	—the constant is	1000
12 yards	—the constant is	100
1 yard	—the constant is	8.33

We will now explain how these constants are derived from the yarn formula and give examples of how they may be used to shorten roving and yarn calculations. Let us take, first, the 120 yards. Referring to the formula as used to figure the counts of the 10s yarn it will be noted that, so long as 120 yards are being used as a basis of length, three elements in the formula will remain constant irrespective of the yarn under consideration, namely, 120 yards, 7000 grains and 840 yards, the hank; while the elements subject to change are the figures representing actual weight and counts. Let us now set up the equation, leaving out the variable weight and counts which will be indicated by (y) and (z) and solve.

$$\frac{120 \text{ yards} \times 7000 \text{ grains (Unit of weight)}}{(z) \text{ actual wt. of skein} \times 840 \times (y) \text{ counts}} = 1$$

$$(z) \times (y) = \frac{120 \text{ yds.} \times 7000 \text{ grs.}}{840}$$

$$(z) \times (y) = 1000$$

$$\text{and } (z) = \frac{1000}{y}$$

$$\text{and } (y) = \frac{1000}{z}$$

Thus:

$$\text{Wt. of skein} = \frac{1000}{\text{Count}}$$

$$\text{Count} = \frac{1000}{\text{Wt. of skein}}$$

The solution of this equation has resulted in the answer of 1000. Careful analysis of this equation will reveal that the product of the two unknown quantities (z) and (y) will equal 1000. For example note the 120 yards of 10s yarn which weighed 100 grains, 10 times 100 equals 1000. Therefore it is clear that if one of these quantities is known it is only necessary to divide this into 1000 to get the unknown quantity. To find the counts of yarn all that is necessary is to weigh 120 yards on the grain scales and divide the results into 1000. Or to find what 120 yards of any yarn should weigh, divide 1000 by the counts. (If possible the reader, who is not already familiar with this constant, should reel several skeins of different kinds of yarn, weigh these on the grain scales and compute the counts by dividing the weight in grains into 1000. It will be interesting to see how the results check with the counts as run in the mill.)

Using the constant of 1000 the weight in grains of 20s yarn will be found,

$$\frac{1000}{20s} = 50 \text{ grains.}$$

A yarn weighing 40 grains per skein will be found to be 25s by using the constant.

$$\frac{1000}{40 \text{ grs.}} = 25s \text{ count.}$$

As we have already indicated when weighing heavy yarns, possibly below 5s, it is better to reel only 60 yards. This saves material, and besides, because of the bulk of the yarn it begins to pile up on the reel so the outside layers are probably longer than the first layers wound on. This tends to make the actual length slightly more than 120 yards. When 60 yards are weighed, as has already been stated, merely double the weight and divide the results into 1000 when solving for counts.

The constant of 100, used in calculating the counts of roving, is derived from the formula in this manner, remembering that 12 yards only are weighed,

$$\frac{12 \text{ yards} \times 7000 \text{ grains (Unit of weight)}}{(z) \text{ wt. in grains of 12 yds.} \times 840 \times (y) \text{ counts}}$$

$$(z) \times (y) = \frac{12 \text{ yds.} \times 7000 \text{ grs.}}{840}$$

$$(z) \times (y) = 100$$

$$\text{and } (z) = \frac{100}{(y)} \qquad \text{and } (y) = \frac{100}{(z)}$$

Thus:

$$\text{Wt. in grains} = \frac{100}{\text{Count}}$$

$$\text{Count} = \frac{100}{\text{Wt. in gr.}}$$

Then to find the counts of any roving divide the weight in grains of 12 yards into 100. For example what are the counts of roving, 12 yards of which weigh 50 grains?

$$\frac{100}{50 \text{ grs.}} = 2. \text{ This will be called 2 hank roving.}$$

Following is an example of how the formula would be used in finding the weight in grains of any hank roving: What is the weight in grains of 12 yards of 1.30 hank roving?

$$\frac{100}{1.30 \text{ H.R.}} = 76.9 \text{ or } 77 \text{ grains.}$$

The constant for one yard is derived from the yarn formula in the same manner that the other constants were found.

$$\frac{1 \text{ yard} \times 7000 \text{ grains (Unit of weight)}}{(z) \text{ actual wt. in grains of 1 yd. sample} \times 840 \times (y) \text{ counts}}$$

$$(z) \times (y) = \frac{1 \times 7000}{840}$$

$$(z) \times (y) = 8.33$$

Thus:

$$\text{and } (z) = \frac{8.33}{(y)} \qquad \text{Wt. in gr.} = \frac{8.33}{\text{Count}}$$

$$\text{and } (y) = \frac{(z)}{8.33} \qquad \text{Count} = \frac{8.33}{\text{Wt. in gr.}}$$

Knowing the weight in grains of 1 yard the counts may be found by dividing this weight into 8.33. Or to find the weight in grains of 1 yard of any yarn or roving, divide the counts into 8.33.

Another use of this constant is when odd lengths of yarn, only, are available for calculating counts. In this case set up the problem in this manner,

$$\text{Count} = \frac{\text{Yards in sample} \times 8.33}{\text{Wt. in grains of sample}}$$

This is the same as if 1 yard were weighed then both sides of the equation multiplied by the total number of yards in the sample. A 10 yard sample of yarn is found to weigh 11.9 grains. What are the counts?

$$\frac{10 \text{ yards} \times 8.33}{11.9 \text{ grs. (wt. of 10 yds.)}} = \frac{83.3}{11.9} = 7s \text{ count}$$

The counts of the yarn are therefore 7s.

The constant of 8.33 is also useful in converting sliver, which is weighed in grains per yard, and hank-roving to comparable units for calculating draft on slubbers. For example a 50-grain sliver may be changed to hank roving as follows:

$$\frac{8.33}{50 \text{ grs.}} = .1666 \text{ hank roving.}$$

On the other hand a .50-hank roving will be found to weigh 16.66 grains per yard by using the constant, thus,

$$\frac{8.33}{.50 \text{ H.R.}} = 16.66 \text{ grains to the yard.}$$

Article three will appear in an early issue.

The Application of Printing Thickeners and Colors to Cotton Fabrics

By C. Norris Rabold

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(Article 4)

THIS fourth article on textile printing continues the discussion by covering a description of printing pastes-thickeners, a description of the different colors used in printing and of the methods of applying them.

It deals also with after-treatment, such as soaping, ageing, etc. . . . . .

A NUMBER OF QUESTIONS naturally come to the minds of those who have read the three preceding articles*. Some of these questions might be: What is the nature of the colors applied in the print machine; how are they prepared in order to make them printable, what is the nature of the thickeners used—their composition, and how are they prepared; what must be done to the cloth after it leaves the print machine to insure the proper fixation of the colors; and how is the cloth subsequently treated to remove the thickener and other chemicals used along with the dyestuff?

Preparing the Colors

The mixtures of dyestuffs and thickeners, made suitable for application in the print machine, are prepared in the color shop, and a brief description of the mechanical side of this department would not be amiss. The thickeners themselves are made up in double-walled metal kettles, arranged so that either steam or cold water can be circulated between the inner and outer walls. These kettles are fitted with mechanical stirring devices, and range in size from 50 to 500 gallons. The color shop is also equipped with a drug room where are kept the dyestuffs in their various forms, powders, liquids or pastes, as supplied by the dyestuff manufacturer. The drug room is also furnished with balances of such sensitivity that small quantities of color may be weighed quite accurately. For mixing the color and chemicals, the color shop is provided with varying sizes of stoneware crocks, and containers made of metals which are resistant to the action of acids, alkalis, reducing and oxidizing agents. On the color shop floor, one sees a number of tubs, very similar in size and shape to wash tubs, either made of wood or metal, in which the prepared dyestuffs are mixed with the thickeners and in which the finished paste is carried to the print machine.

In large color shops where considerable quantities of the same color are being used, there are various mechanical straining machines where the prepared color, after being stirred into the thickener, is strained through cloth to insure a more even mixture with the thickener and also to remove any lumps or particles which would be apt to cause trouble in the color box of the printing machine. In most color shops, however, this straining of paste is still done by hand.

In some modern color shops, using colors which are apt to speck or collect in aggregates, harden or settle out, we find machines known as "colloid mills". These are machines where two metal surfaces are fitted within a few thousandths of an inch of each other, one revolving at a very high rate of speed. The paste can be passed through this small space between the two surfaces where a high rate of shear obtains and a very uniform dispersion results, due to this high rate of shear; thus colors or pastes afflicted by the above-mentioned troubles can be placed again in workable condition.

Many modern color shops also have refrigerating rooms or ice-making machines so that prepared printing pastes, whose decomposition is accelerated by high temperatures, may be kept cool. These same devices may be used for cooling the water which is circulated in the walls of the jacketed paste kettles.

All such equipment is of great aid in making it possible for the color shop to turn out a greater volume of thickeners in any given time or enable them to use colors which otherwise they could not use, thus giving a greater range of shades, or the possibility of using cheaper colors to get a given shade.

The Printing Thickener or Paste

The subject of printing thickeners is one that, were we to deal with it comprehensively, would take an article several times the length of this one. We shall, therefore, confine our remarks to such length that the reader will get a sufficient picture of them to understand the part that they play in the application of the color to the cloth.

To the writer an ideal printing paste possesses the following characteristics. It is not too watery or so lacking in body that, when applied to the cloth, it "flushes" or spreads out beyond the area of the

*The first article in this series, on page 53 of the March issue, gave a general historical background of textile printing; the second installment, on page 78 of the April issue, described the modern textile printing machine and its various parts and how they operate. The third article, on page 52 of the June issue, covered such subjects as engraving the rolls; arranging the co'ors for printing; and some common printing troubles. Copies of previous installments are available to subscribers upon request.—THE EDITORS.

engraving. On the other hand, it should not possess too much body nor be too heavy so that when it is printed, the impression on the cloth is "bare" or "skinny", which are the printer's terms for describing a film of color which lays on the very outside or surface of the cloth. The paste should be of low dry substance, both from the standpoint of cost and also because the more inert material there is present in the thickener, other than dyestuff, the more tendency there is to coat the fibers of the cloth so that the paste acts as a resistant film and prevents the color from penetrating, even though it is fully dispersed in the thickener.

This penetration of the maximum amount of color in the cloth is the whole object of the printer, and the more color that he can get on the fiber with a given concentration of thickener, and the more color that stays there, the more efficient is the printing operation. A printing paste should be of such a nature that it is neither too "long" nor too "short". These are terms which are difficult to define, but to those familiar with thickeners, a "short" paste is one that breaks into chunks when stirred or agitated, whereas a "long" paste is one that flows without breaking, in a manner similar to syrup. A paste must have good "body" which is a term used independently of viscosity or dry substance. By the term "body" we mean a paste that does not thin down on agitation or stirring and possesses a heavy consistency so that it keeps the color well suspended and smoothly dispersed.

A paste should have sufficient adhesiveness to adhere to the depressions in the engraved printing roll, yet it should not be so tacky or sticky that it will not come out of the engraving cleanly when brought in contact with the print cloth, for if the paste is too tacky and does not pull out evenly, it causes what the printer calls "stick-ins," giving a broken and uneven print. Also, a paste that is too adhesive does not work properly under the doctors, and is a factor in causing the condition known as "scumming", which is where the doctor is unable to clean the engraved portion of the printing roll completely, thus causing a very light film of color to deposit all over the cloth.

On the other hand, if the paste is not adhesive enough, it again will not deposit on the cloth evenly and in the case where a large area is to be covered by the design, a mottled effect is produced, due to unequal masses of thickener falling on the cloth. Good penetration of the fabric is essential in order to give the proper depth to the shade, as a surface impression does not give any color a chance to display its full bloom and brightness.

After leaving the print machine, the thickener should be of such a nature that when the goods are treated by the subsequent steaming operations, universally employed for the development of the different classes of dyestuffs, it has good re-moistening characteristics or, in other words, will re-absorb water vapor in the proper time and concentration to effect complete solubilizing of the color and so permit it to dye into the fiber.

Starches and starch products quickly attracted the attention of the early printers as being a suitable means of carrying color and registering it on cloth. These materials are still used in large quantities and still afford the best means by which designs can be registered. As printing originated in Europe, the first starch that was used for a printing thickener was wheat starch and its use still persists today in this country, many formulae for printing thickeners still specifying this particular starch. In Europe, wheat starch was abundant and cheap, but in this country, most printers have replaced wheat with corn starch which is not only cheaper but has been found to work as well. Other starches which have found favor are tapioca and some sago.

Among the modified starches, or starches which have had their physical structure changed by means of heat or chemicals, or both together, are the British Gums. It is said that the discovery of British Gums was made accidentally, due to the burning down of a warehouse where starch was stored. In an effort to salvage the contents of the warehouse, a number of the bags which did not seem to be entirely decomposed, were dragged out, and some bright fellow decided to mix the brownish-yellow contents of these bags, so entirely different from the original white material, in water. He made a paste of this brownish-yellow substance which he found to be quite tacky, possessing good body and long string, and though he had to use several times as much of it as he would have of the original starch, it made a paste of equal thickness. It occurred to him that this material might be used in printing, for which the original starch was designed, and when tried out, it was found that this roasted starch possessed a more suitable body, penetrated better, and gave clearer and brighter prints than the ordinary thick-boiling starch which had been used up to that time. It was soon discovered that it was unnecessary to go around burning down warehouses in order to make such a product and suitable converters or cookers were designed where heat can be ap-

TABLE I.—A GENERAL CLASSIFICATION OF PRINTING COLORS FOR COTTON

I. **Basic Colors**
   - A. Bright, full shades, combined with reasonable color cost.
   - B. Reasonable fastness to light but poor and medium washing fastness.

II. **Chrome Colors**
   - A. Same qualities as basic colors but slightly duller, flatter shades.

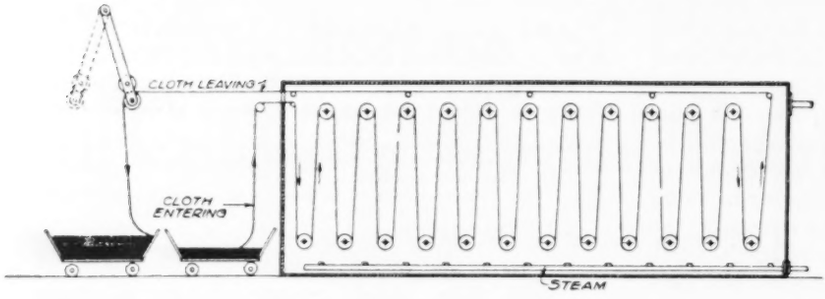
III. **Direct Colors**
   - A. Not nearly so bright as basic colors though economical to use, but having rather poor light and washing fastness.
   - B. When printed, generally employed on special work where neither light nor washing fastness is required.

IV. **Vat Colors**
   - A. Very fast to light and washing. Yield bright, full shades.

V. **The stable and water soluble preparations of the leuco compounds of vat dyestuffs.**

VI. **Naphthol Colors**
   - A. Possessed of good fastness to light and washing. Employed largely on dress goods patterns. Bright, rich colors.

VII. **Mixtures of various naphthols and diazoamino compounds.**
   - A. These mixtures are similar in both shade and fastness to the naphthol group of colors, being derived therefrom.



A sketch of a rapid ager, used for after-steaming fabrics following the printing operation . . . . . .

plied to starch under controlled conditions so that many modifications of the original starch could be made by heat.

Various acids and alkalis as well as oxidizing agents were also found to have a modifying influence on starch and many converted products are used by the printing industry which have been treated chemically as well as being modified by heat alone. In this country such products are made largely from corn starch though we find some made from tapioca. As it is necessary to use most of these gums at a concentration several times greater than that of the base starch, to produce a thickener of equal consistency, the tendency has recently been to blend various starches and introduce one or more of the converted products in the mixture so as to produce a paste which will be of good body and low dry substance, possessing at the same time as many of the working qualities mentioned in the preceding paragraph as can be incorporated.

Of course, for many years certain natural gums have been in use as thickeners. Among these are gum tragacanth, locust bean gum and gum arabic, these being mostly saccharides similar in chemical structure to the cellulose starch products and derived from plant life. For certain special types of printing, casein from milk, blood albumen and egg albumen—their names indicating the source—are used. Other natural gums such as karaya and senegal are also used for special types of work but they do not enter into the picture of cotton printing very largely.

Preparing the Thickener

In preparing a starch or British Gum thickener for use, the common practice is to mix it with the requisite amount of water in one of the cooking kettles previously described. Steam is introduced between the walls of the jacket, the agitators started, and the temperature raised until gelatinization is complete, the cooking being continued for a half hour or so until a thorough swelling or rupture of all the starch granules takes place, during which time the temperature of the starch is around 200 degrees F. When the paste has been thoroughly cooked, the steam is shut off and cold water introduced into the jacket so that the contents of the kettle may be cooled as rapidly as possible to room temperature, all of this taking place with constant agitation by the stirring devices. When the paste has been cooled, the kettle is emptied of its contents.

It has been found that a small addition of fatty material to the thickener, while cooking and cooling, will produce a paste of a smoother and finer texture than if the starch were cooked without. This fatty material may be mineral oil, sulphonated vegetable oil, or a fatty acid such as stearic acid. During the cooling of the thickener, the various chemicals necessary for the type of color to be incorporated with it are added at the proper temperatures so that they do not volatilize off or so react with the paste as to make it unsuitable for printing. The thickeners are then transferred to storage tanks to await their mixing off with color.

Description of Printing Colors

As the subject of print colors can be approached from many different angles, we shall endeavor to give the reader enough of the method of application and sufficient of the chemical nature of certain dyestuffs as to render print procedure understandable.

Print colors may be roughly divided into classes, these classes being determined largely by the chemical nature of the color, or the method used in applying it. Most of the cotton colors printed today may be grouped according to the descriptions given in the tabulation herewith, Table I.

In each of the groups mentioned in Table I, are many exceptions to the generalizations of fastness, brilliance or depth of shade. As for the printing of these colors, we shall attempt no more than to state the printing procedures of each group so that the reader may understand something of the reactions which take place chemically and cause the color to be fixed on the cloth.

I and II—Basic and Chrome Colors: As these two classes of dyestuffs do not have in themselves any particular affinity for cellulose, it is necessary in printing them to incorporate in the printing paste chemicals which, upon after-treatment of the printed goods, act as a binder between the cotton and the color. Such chemicals are known as "mordants", and in printing basic and chrome colors, they are so treated as to cause the mordant and the color to penetrate into the cloth, where the mordant is rendered insoluble, thereby fastening the color within the goods.

The mordant employed with *Basic* colors is tannic acid, and the procedure for printing these colors is as follows:

The dyestuff is dissolved in water and then mixed with a previously prepared starch thickener to which is added a solution of tannic acid, a vegetable acid readily soluble in water. The color paste is then

printed, dried over dry cans and as the water in the thickener is driven off, a slight penetration of the color and tannic acid into the cloth is effected. The goods are then subjected to a steaming action in a closed chamber at a temperature slightly above 212 degrees F. The cloth picks up the moisture from the surrounding atmosphere, and the color and the tannic acid penetrate further into the fibers. On leaving the steam box, the cloth is passed through a solution of a salt of antimony which reacts with the tannic acid, precipitating it as insoluble antimony tannate. This chemical acts as the bond between the cloth and the color, holding the dyestuff fast in the interstices of the cloth.

In the printing of *Chrome* colors, the dyestuffs are also dissolved in water and added to the thickener, and at the same time a quantity of acetate of chrome is added to the color paste, which is then ready for printing. After printing, the cloth is subjected to a steaming operation which permits the color and the acetate of chrome to penetrate into the fibers. Upon being removed from this atmosphere of steam, and dried, the acetate of chrome decomposes into acetic acid which volatilizes off, and the insoluble oxide of chrome, which remains in the fiber, holds with it the dyestuff.

III—Direct colors, as their name implies, have direct affinity for cellulose, and in printing them, a solution of the color and thickener is mixed together and applied to the cloth, which is subsequently steamed in order to allow the color to penetrate. These colors are not very fast to washing, as the printing procedure does not allow a high percentage of the color to be transferred from the thickener well into the fiber. Consequently, printed direct colors are somewhat less fast than are the same colors dyed onto a piece of cloth.

IV—Vat colors are certainly the oldest of the so-called fast to washing and light colors, and indigo is the parent substance. Today there are many members of this group whose chemical structure is based on indigo and to which dyestuff manufacturers have added numerous other colors, all printed in a similar manner but of a different composition. With some exceptions where dispersable powders are offered, colors are placed on the market in a paste form, this paste being a fine dispersion of the pigmented dyestuff in a suitable thickening agent.

In preparing the print color for the machine, the proper amount of *vat color*, as sold by the manufacturer, is thoroughly mixed with the color shop thickener, with which there is also incorporated a quantity of alkali—usually potassium carbonate, although sodium carbonate and the correspondingly stronger alkalis, potassium and sodium hydroxide, are sometimes used. In addition, the paste has in it a quantity of reducing agent, usually sodium hydrosulphite, as well as a hydroscopic agent such as glycerine. The vat color, as sold, is insoluble in water and as we said, in pigment form. It is insoluble for two reasons, first, because it is in an oxidized state, and secondly, the color molecule contains a number of sulphonic acid groups which are not water soluble. After printing, the vat paste is subjected to the usual steaming operation.

Due to the moisture in the steaming apparatus, the alkali in the thickener combines with the sulphonic acid groups, making the corresponding alkaline salts, which are water soluble. At the same time, the temperature prevailing causes the reducing agent to act upon the structure of the vat dye, changing it from the oxidized to the reduced or leuco state, both of which reactions render the molecule of vat dye entirely water soluble. The hydroscopic agent causes the cloth and paste to absorb moisture from the surrounding atmosphere of steam so that the color dissolves in this water and transfers from the thickener into the fibers of the cloth itself. After the steaming operation, the cloth is then passed through a solution of oxidizing agent, usually sodium di-chromate and acetic, or sulphuric acid, which reverses the reactions which have taken place in the steamer. The oxidizing agent brings the color back from the leuco to the oxidized state and the acid attacks the sodium sulphonate, changing it back to sulphonic acid, thus rendering the vat dyestuff insoluble again, but now well in the cloth.

V—The stabilized leuco dyestuffs are offered to the printing industry as finely dispersed powders. Being in the reduced state, they are soluble in water and are so dissolved, this solution being added to the printing thickener which contains an oxidizing agent such as sodium chromate or di-chromate, as well as a catalyst or oxygen carrier to accelerate the action of the oxidizing agent. These chemicals are usually ammonium vanadate or ammonium thiocyanate. After printing these colors, they are subjected to a steaming, at which time they are also exposed to the vapors of acetic and formic acids, which treatment brings about the necessary chemical reactions and changes the reduced dyestuff into its insoluble oxidized form and at the same time causes it to dye into the cotton fiber.

VI—The naphthol colors involve a much differ-

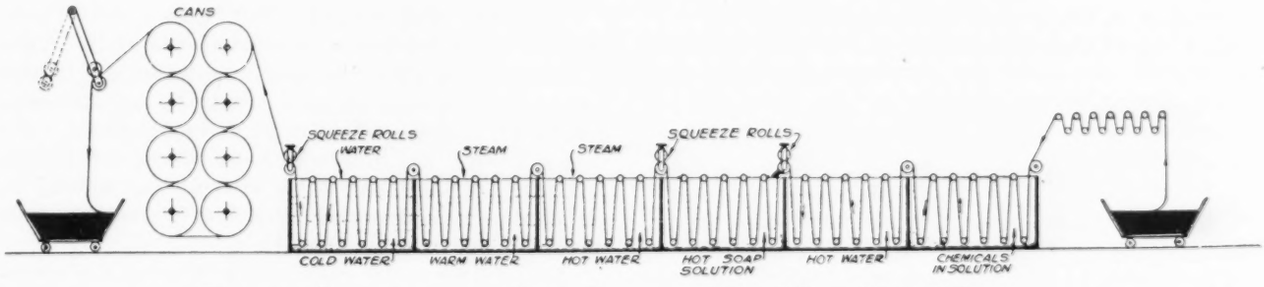
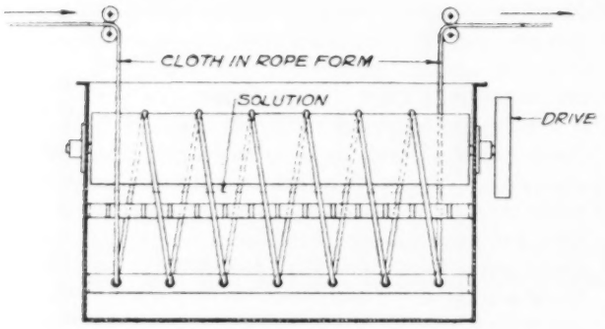


Diagram of an open soaper for continuous washing of the printed cloth . . .



A rope washing machine

ent method in printing. In this procedure, two chemicals, neither of which is a dyestuff, are combined in the cloth itself in such a manner as to produce a color. From the naphthols have been derived the present-day stabilized mixtures of naphthols and diazo-animo compounds whose use is still further extended, due to the fact that they can be printed alongside of stabilized leuco compounds and in some cases mixed together with them so that each class tends to amplify the other and give the printer a greater latitude in his range of shades.

In printing *Naphthol* colors, the cloth must first be impregnated on a padding and drying machine with the naphthol solution, and dried so that the cloth is uniformly treated. In the color shop, the fast color salts have been dissolved in water and mixed into the printing thickener at the proper concentration. The prepared cloth is then run through the printing machine and the color salts printed on it. Where the color salt is printed on the naphthol, immediate coupling takes place between the two, forming a dyestuff within the fiber of the cloth. In the case of the naphthols, no subsequent steaming or after-treatment is necessary in order to develop the color, as this is formed by the chemical reaction between the naphthol and the color salt, though the cloth must subsequently be washed in order to remove the naphthol from the portions which were not printed and so leave them white.

VII—The mixtures of various naphthols and diazo-amino compounds are extremely stable in either powder or liquid form when in neutral or alkaline solutions, but are developed quite rapidly when exposed to an atmosphere of acid vapors or when their solutions are made acid. These colors can be printed directly on the cloth without previous impregnation, as the naphthol is already incorporated in them, but in order to bring about coupling, these colors must be subjected to a steaming operation in the presence of acid vapors. The acid splits out of the molecule those groups which have heretofore prevented the development of the dyestuff, thus allowing coupling to take place and the color lake to be formed in the goods.

Description of Ageing

We have mentioned rather frequently, in talking of the various classes of colors, the necessity of after-steaming, which means much more than the mere exposure of cloth to steam. The average person thinks of steam as a rather fine white cloud arising from boiling water, whereas steam of course is an invisible gas, and this fine white cloud is actually composed of condensed steam or minute droplets of water. If the various groups of colors were exposed to such an atmosphere immediately after printing, the colors would run where these droplets fell upon them, or be imperfectly developed, so therefore, several pieces of equipment have been devised for the proper treatment of printed goods. These are known as continuous steamers, cottage steamers and agers.

The continuous steamer is a large closed container, through which cloth is slowly passed from one end to the other and exposed to an atmosphere of steam slightly above 212 degrees F, for a long period of time. In the printing of chrome, basic and direct colors, such a long-time steaming is necessary in order to insure the full penetration of the color and mordant into the fiber.

This continuous steamer is only used where large quantities of such colors are to be printed, and because of its size and cost, it is not adapted to small runs. Where only small quantities of these colors are to be printed and developed at one time, the cottage steamer is used, though the principle is the same as that of the continuous steamer. Here the cloth is loosely plaited down into trucks with open sides and ends and then pushed into a small chamber which is then closed and steam admitted for such time as to insure full development of the colors.

For the vats, stabilized leuco compounds, and stabilized mixtures of naphthols and diazo-amino compounds, the so-called rapid ager or steamer is used. This is a comparatively small chamber through which the cloth is run continuously, entering and leaving through narrow slits so as to prevent the escape of steam from the interior, or the admission of air. The cloth is exposed to the steam for a short period of time, ranging from three to eight or nine minutes. These rapid agers are constructed variously of iron or wood, but where corrosive acid vapors are used, the iron ager is quickly attacked, and these types of colors are usually developed by a passage through a wooden ager, while the iron ager is used for vats. All these types of steaming equipment are provided with insulated walls, steam coils on top to prevent condensate, exhausts for circulation of steam in the interior and removal of a certain portion of the steam and fumes within, as well as controls for regulating the temperature and pressure.

The Open and Rope Soaper

After the development of all these types of colors, the usual procedure is to wash the cloth. This is done by running the cloth continuously in the open width, through an open soaper—a machine consisting of a series of soap boxes and squeeze rolls between the boxes, into which are placed a hot soap solution, hot and cold water rinses—and having at the end a stack of drying cans over which the cloth is passed.

There are several reasons for soaping the goods after steaming. These are, first, to remove the ex-

cess color which has not dyed into the fiber; second, to remove as much of the printing thickener as possible, which has now served its purpose of carrying the color onto the cloth; third, to remove all of the chemicals which have assisted in the proper development of the color and which would be injurious to the fiber if allowed to remain, and lastly, in the case of certain of the color groups such as the vat colors, to give the last chemical treatment which would take place as the first operation on the soaper, to insure the proper development of the color.

Rope soapers are also used for this same purpose and consist of a series of kettles through which the cloth is passed endlessly. In these kettles will be placed hot soap solutions and hot and cold water rinses. Rope soapers serve the same purpose as an open soaper but because of the more violent mechanical treatment the cloth receives, the soaping action is more severe.

The cloth after leaving the soaping unit is then ready to be turned over to the finishing department, where it is subjected to further operations tending to improve its feel and appearance.

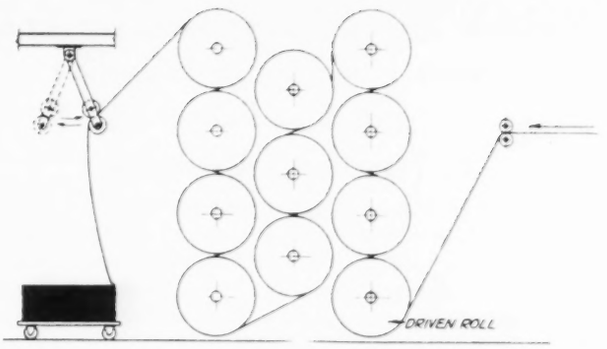
Discharge and Resist Printing

Before concluding this discussion it would be well to mention that there is more than one method of printing, some of which may be classed as combination printing and dyeing operations. Those in widest use are application, discharge and resist styles. Heretofore, all our description has been in reference to the application method, which is the one most common and consists in mixing the color as previously described, with the thickener and applying it to the cloth.

Discharge and resist styles are used for many special purposes and they find especial favor in the printing of rayons. We shall attempt no more than to describe them in their barest essentials, as the procedures, colors and chemical combinations are of considerable complexity.

The resist method consists in printing on plain cloth the thickener which may or may not contain color but always contains chemicals which will subsequently destroy the dyestuffs with which the cloth is to be dyed. If the paste does contain color, it must belong to a class unaffected by the subsequent dyeing operation. After printing and drying, the cloth is then padded through a solution containing the dyestuff which is to form the solid portion of the design, again dried and subsequently aged to develop both the pad color and the colors which have been printed on, in the resist. The steaming operation thus permits the pad color to develop its full shade except where the cloth has been printed with the thickener and the proper chemicals placed therein to destroy it.

In the discharge method, the cloth is first dyed a solid shade upon which is printed either a plain thickener containing a color-destroying chemical, thus producing a white design, or certain colors are added, which are unaffected by this chemical, giving a multi-color effect. After printing and drying, the cloth is then aged, this treatment bringing



Dryer or drying cans or cylinders

about the destruction of the dyed color, and where a color discharge has been printed, the proper development of this dyestuff. By means of both the resist and discharge styles of printing, very attractive all-over designs can be produced and these methods do away largely with the misfitting of designs so that open spaces or over-printing occurs to such an extent as to spoil the effect of the pattern. They also give the printer a way in which he can produce a wider range of interesting effects in a greater variety of shades than if he were limited to one or two classes of colors.

[The fifth installment in this series, to appear in an early number, will deal in a practical way with some common problems in the bleaching and finishing of printed cloth.—The Editors.]

◆◆

"Of Course, You've Got a Right!"

"I don't suppose it's any of my business, and I guess you'll think I'm butting in, but I'm getting pretty much fed up——"

"Now, just a minute," interrupted the foreman with a smile, as one of his men started to open up a grievance before him. "I want you to feel that you have every right to talk to me about anything that has anything to do with your job or your relationship with me. I want to understand you," continued the foreman pleasantly, "and we can get along much better when I know about anything that's bothering you. Now, go ahead. I'm glad to hear and consider whatever you have to say."

—"How to Handle Grievances"; Elliott Service Co., Inc.

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No Interest

The foreman was working at his desk. One of his men, clearly disturbed, approached him.

After letting the man stand in embarrassment for a minute, the foreman finally looked up and asked irritably, "What's bothering you?"

The man proceeded to state his grievance. The foreman kept on with his pencil work, appearing to pay little attention.

When the man had finished the foreman said, "Oh, you can't let little things like that bother you! Go on back to your job and we'll try and talk about it sometime when I'm not so busy."

1. Should a foreman ever be "too busy"?
2. Did this foreman make it any easier for himself by this kind of postponement and lack of interest?

—"How to Handle Grievances"; Elliott Service Co., Inc.

Variable Speed Transmission for Continuous Handling in Mangling and Dry Range

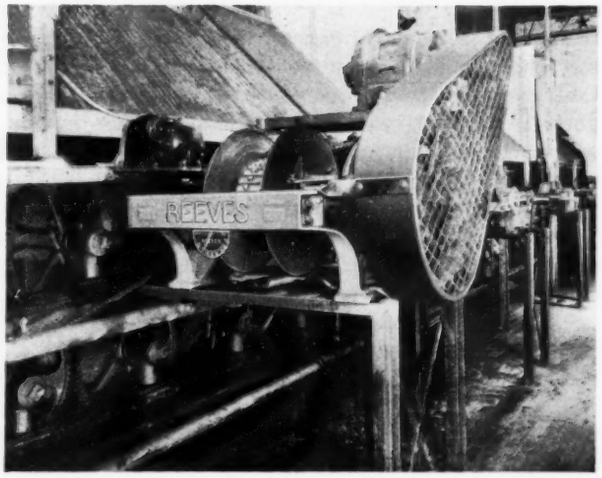
By Francis A. Westbrook

ONE OF the most up-to-date installations in the textile industry of mechanical variable speed control has just been completed on a starch mangle and dry can range in a large southern finishing plant. Four variable speed units have been used, and with their help it is possible to run different kinds of cloth through these processes with continuous automatic handling, and in some cases to eliminate a Sanforizing process.

The set-up is as shown in the diagram. The starch mangle and three stacks of dry cans, each consisting of fourteen cans 23 inches in diameter, are installed in range. In the mangle, of course, the cloth is passed around a roll and through the treating solution, and is then dried on the cans. Many different kinds of cloth are handled and a different speed is required for each. This calls for an infinite speed range from a minimum of 12 to 96 yards per minute.

Naturally for some requirements a uniform tension must be maintained on the cloth from the mangle to the wind-up at the end of the third stack of cans; and in other cases, where it is desired to shrink the cloth between the first and second or second and third stacks, it must be permitted to run slack between those points. To get these results a mechanical variable speed transmission unit was installed at the mangle and at each of three stacks of cans, as shown in the diagram.

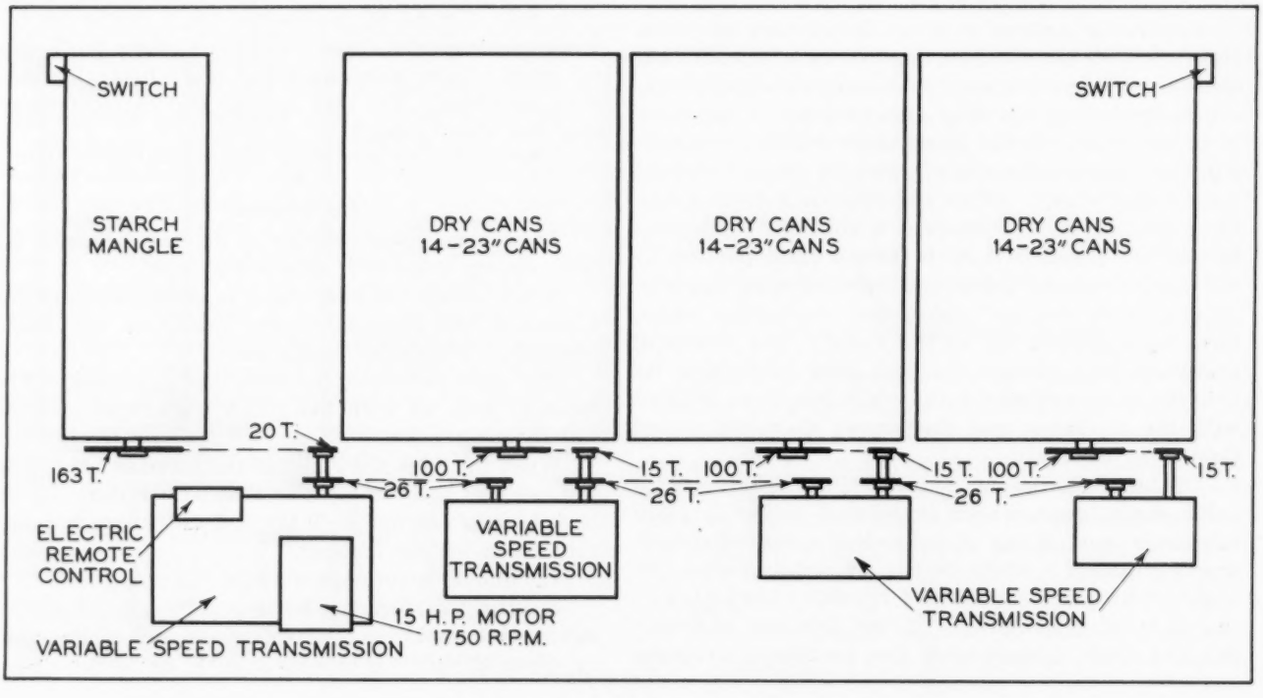
The variable speed unit at the mangle is directly driven by a 15-hp 1750 r.p.m. motor through a v-belt drive. This variable speed unit is controlled by electrical remote control with push button stations at both the feed and delivery ends of the range, in order that



Showing the motor and variable speed unit at the mangle in the range . . . . . .

the operator may control the speed from either end. The variable speed shaft of the unit at the mangle is connected by chain and sprocket to the constant speed shaft of the variable speed unit on the first stack of cans. This unit, in turn, drives the unit of the second stack, and the final drive is to the fourth unit at the third stack of dry cans.

Obviously, any change in the speed of the first speed control unit, exercised by operation of the remote control, provides corresponding changes on each of the other three variable speed units. When uniform tension is desired all four units operate in synchronism with great precision so that the cloth is wound up at almost exactly the same speed as that at which it is fed into the mangle. But when it is desired to vary the tension between any two stacks of dry cans it may easily be done by changing the speed setting of any of the three manually controlled transmissions. In this way shrinkages may be provided for as desired.



CURRENT TEXTILE TOPICS ....

Talk of the Month

ECONOMIC CONDITIONS have assumed a definitely new complexion since the first half of the year. The law of supply and demand, a seeming relic from the days of untrammelled business, turned the tide of buying upward even before July. Cotton goods were in the first turn as cautious buyers found supply in producers' hands reduced to a minimum and distributors facing new requirements in volume. Hand-to-mouth buying of many months began to look like a worn-out and unsound policy for the new condition.

Cotton industry in forefront of new forward movement

Investment buying of stocks in Wall Street, following the prorogation of Congress, was the first indication of a new sentiment toward the future. The New York Stock Exchange, coming out of the doldrums and starting a wave of buying which carried prices rapidly upward, predicated not only a rising tide of business but a new period of profitable times for industry. Another factor in the whole picture—the government lending-spending program—is a new and problematical element.

Purchasing agents generally up to late in June were counselling a further buying only for immediate needs through the summer, on the expectation that the upward turn of business would not make real progress until fall. No constructive development had come to remove the spirit of caution that followed the era of fear. But it was realized that products were inordinately low in prices and when stocks began to climb the whole spirit of business was suddenly changed.

Probably no industry was more ready, if any was as well prepared, as cotton manufacture for a turn from the depression. Constant adjustment of operations starting late in the spring of 1937 and reaching a drastic climax in April of 1938, had put the mill house in order. After that it was merely a question of waiting for a new psychology to spread over the business world, or for something to develop in this industrial division to start it moving alone.

June—Month of Brides and Buying

June brought a combination of direct and indirect influences which started the cotton industry on its upward way. First there was the passing of the low point for more than five years in raw cotton at the end of May and a sharp rising trend in prices of the raw staple through June. Then came the burst of buying in securities which dispelled the general gloom and quickened a general recovery which had not been expected for another two or three months.

Though not a constructive move at any time, strikes may also be a sign of prosperity. As in the case of the July outbreak in the South, strikes are fomented when it appears that the prospects are good for labor to achieve an advantage therefrom. Mills which had carried wages up to levels in 1937 that were ruinous under the conditions of 1938 naturally had to reduce rates or go out of business. New labor demands were considered unfair, moreover, since the increases of 1937 had not been fully rescinded and mills had sustained severe losses that could not be recouped for many months.

As always in a period of recovery, the heavy industries were slower to start than the consumer-goods lines. Before the end of July, however, the general industrial outlook had improved considerably and predictions were that industrial buyers of cotton goods were getting ready to take advantage of low prices for covering distant requirements. It was felt, incidentally, that the heavy industries might receive an early impetus from the big government program of spending.

Regarding the forces of recovery, it is undoubtedly true that natural elements since spring have been favorable to the upturn that has come. At the same time, the artificial factor of government spending cannot be overlooked, even though it can hardly be measured definitely as an immediate force. One thing that can be measured is its altering effect upon the normal course of the business cycle and another is its mere temporary advantage and ultimate futility.

As to altering the normal course, Malcolm P. McNair, professor of marketing at the Harvard Business School, recently said: "Normally retailing tends to lag behind industrial production both in depression and in recovery. Because of the governmental spending philosophy of the last five years, however, that statement requires correction. Retailing is essentially the first part of the business structure to feel the effects of pump priming.

"In a sense, therefore, retailing obviously has been a substantial beneficiary of the government's spending policies. In a more important sense, however, and for a longer-run period, retailing is the loser when policies of pump priming fail to bring about a really substantial revival of private business activity."

As Prof. McNair implies, it is private business that must carry the load in the long run, if the country is to be on a sound basis. So-called pump priming of the government is an artificial stimulus to public spending. It may be hoped once more, however, that pump priming will achieve its ostensible purpose of putting business on a sound basis.

Some encouragement for this hope is the different position that industry holds, relative to government, now and in the previous instances of pump-priming by the present Administration. A marked letter by Scheuer & Company says: "If legislation and governmental action in and previous to 1937

was harmful to business, then clearly the major acts of the last Congress should prove helpful. In the matter of taxes, the voice of industry has prevailed. The hours and wages act turned out to be most moderate. Relief legislation spells buying power and money circulation."

New England Mill Situation

THIS NORTHEASTERN district had a sudden flood of optimism as the second half of 1938 began and much of it was due to the changed textile situation, notably in cotton goods. The June boom in stocks was a signal for release of pent-up feelings, in regard to business, but prosperity in New England is so bound up with industry that something such as the spurt in textiles was needed to give courage over economic prospects.

While printcloths, in which the South predominates, set the upward pace in June cotton goods activity, the movement spread rapidly enough into other standard constructions and into specialties to create much better mill conditions throughout the past month. Thus New England cotton manufacturers found their backlogs of orders expanding in a way to foster new activity in machinery.

Many plants which had been operating three to four and a half days a week soon were getting back to full production. By virtue of a cautionary program by the mills started fourteen months before, the inventory position was unusually sound as the long and dreary period of negligible buying came to an end. With no stocks of consequence in the way, new orders were the basis for prompt new production.

Various estimates of production in New England at the end of the first half of 1938 ranged from 50 to 60 per cent of cotton mill capacity. A slight pick-up among some fine goods manufacturers here had begun in May. This branch a full year previous had seen the danger light, being in the forefront among all industries in seeing that the 1937 recovery movement had become a runaway.

Late in June a directors' meeting of the Nashua Manufacturing Company silently testified realistically to the drastic reaction to the unhealthy boom. Payment on the July dividend on preferred stock was postponed because of the severe slump in the preceding quarter. The notice to stockholders read:

"On April 1, at the time we sent you your dividend check, we wrote that unless business improved it would probably be inadvisable to declare the next dividend on the first preferred stock. After that date business grew steadily worse, although recently there has been a decided improvement in sentiment and pick-up in business. Your directors feel it is inadvisable to pay, at this time, the dividend due on July 1. Accordingly, at the meeting held today the directors postponed action on this dividend."

Fortunately the tide was turning coincidentally with the reaching of such a pass as indicated for the industry in this region. Orders began to exceed the limited production by considerable margin. This brought encouragement to manufacturers and July found the mills putting workers back by the several hundreds in numerous plants of the district.

Cotton Leads on "Road Back"

Cotton was outstanding as the leader in breaking out of the deep rut of industrial activity among the industries of New England. This was a logical sequence to the foresight of cotton manufacturers here last year in regulating production to demand. Buyers who had suddenly lost their fear were prompted to place good orders when they learned that mills were not carrying burdensome stocks because they had not recklessly produced for occupation of machinery.

Not so fortunate was the price level at the start of the July-December half of the year. The start of active selling was at the usual below-cost basis incident to a dull market of many months. A quick tendency toward higher prices was the accompaniment to better buying, but it was hardly possible to create profitable levels in the first splurge of activity and up to late in July profitable trading was still a prospect rather than a realization.

Heavy buying of print cloths in June, while pertaining more to mills in the South, had its correlating favorable influence in the North. The more spindles turned to standard construction of coarse goods, the less competition for other cloths. With fewer spindles available for fancy and novelty lines, on which producers for a long time have followed a careful policy of producing only on order, it left buyers of such constructions under the necessity of covering or facing danger of getting caught short.

This circumstance and the unusual values obtainable led to good buying also of fine goods before July. Mills continued to be cautious in regard to expansion of output through New England, yet they naturally responded to orders in volume with a quickening of production and extension of employment. Feeling was prevalent in the middle of July, moreover, that the summer would bring a steady improvement.

In the leading fine goods center of New Bedford, active demand for raw cotton gave indication of confidence in the outlook and observers were forecasting good orders at rising prices. Similar reports came from Fall River. Lowell was another Massachusetts city showing a better condition. Other advices reflected an encouraging manufacturing situation in leading cotton manufacturing centers from Rhode Island to Maine.

The Closed Door

We know a foreman who feels that he is doing a good job in handling grievances by doing what he can to prevent grievances being brought up.

But by word and deed he has let his men know that he doesn't like a complainer.

Do you think anything is to be gained by "putting the damper" on grievances?

Or by "closing your door" to people who would *or might*, come to you with troublesome problems *that are very real and important to them?*

—"How to Handle Grievances"; Elliott Service Co., Inc.

"THE SITUATION"

As Seen Across an Executive's Desk

July 18, 1938

THE NOTE OF OPTIMISM upon which we closed our review last month has materialized into a definite upturn of business and the textile industry is beginning to show the improvement as signified by reduction of unemployment, increased operation, and tendency of prices to approach the cost level.

After the rapid period of contraction last fall, plus several months of non-decline in business, we have now begun to feel the influences of a leveling process which renew our hopes for a stable recovery generally and in our own industry specifically. To review a bit: the cotton-textile industry has seen a total activity for the first six months of the year of approximately 34 million active spindle hours against possible capacity operations of 54,800 million giving a percentage figure of roughly 62 per cent compared to the 1937 total for the first six months of 52,947 million hours, showing a decline in 1938 of 36 per cent. Comparative figures show that the operation of the cotton spinning industry as a whole has been at the 1932 rate for the six-month period. In this, production has followed the trend of the primary market, although the latter has been amplified by Government purchases of a substantial nature which were nonexistent in the 1937 period. Translated into yardage the six months volume of cotton goods for this year would be approximately 3,200,000,000 square yards or more than 1¾ billion square yards less than was produced during the corresponding period of 1937.

It is evident that nothing like such a decrease has occurred in public consumption, and the natural conclusion is that the drain on reservoirs of merchandise in stores and dealer stocks has been heavy. With five million more people in the country than there were in 1932 and with the national income estimated to be at least 30 per cent greater, consumer buying will soon force production to proceed at as rapid a rate as consumption. It is predicted that the revival of business will be led by consumers' goods. It is here that inventories are lowest and it is here that buying cannot be postponed. Also, the need for many types of durable goods is becoming urgent, and this need will contribute to make recovery out of what might have been a mere rally.

With business headed definitely upward, there is only one factor tending to keep the textile industry from feeling the full benefits, that is our greedy habit of filling up our books with orders at the lowest prices, committing ourselves to several months of operation at below cost levels without being cagey enough to take a little business now, a little bit more when things get slightly better, and finally come in on the home stretch with the good prices which demand is bound to create after a while. We are just so scared that our competitor will get some business away from us that we must ruin ourselves hogging it all while the market is yet down.

The announcement on the part of several large southern mills that they were going on full time again, the announcement of one New England concern that three shifts would be on full schedule immediately, and the day by day increase in almost all mill operations, all point to the simple fact that we have not yet learned our lesson in economics, or to put it bluntly, manners.

"Don't Sell Below Cost"

That it is poor business and lack of acumen to sell too far ahead on below-cost levels has always been known, but to have that thrust at us by a purchaser of our own goods is news of the first water. In a paid full-page avertisement which recently appeared in some daily trade papers one converting house states that the responsibility of setting prices at above cost levels rests solely with the mill executive.

"Who makes under-cost prices?" it asks. "The buyer? Doesn't he pay the prices you finally set?"

"Isn't the responsibilty up to the mill executive who works under the stress of wicked over-production? . . . "Should not mills and selling houses with large investments, honest and capable management, making quality fabrics, and who wish to pay an American wage to American labor, expect a fair profit for service rendered?"

We all know this is true, but how many of us have the guts to examine our costs and ask a profit for service rendered? We should simply remember that a sale made at break-even or below cost prices is not a prize for the seller, it is a gift to the "buyer" and Christmas is only supposed to be a once-a-year event.

With a bullish market in everything, with the great American Buy-wagon on the move, the wise man will remember that anything purchased now is a good investment for the purchaser and should at least carry some profit for the seller.

There is plenty more buying to be done before the present depleted stocks of converters, wholesalers, retailers, consumers are fully replenished.

Andrews to Administer the Wages-and-Hours Law

After all the agonizing we have at last got it, whether we want it or not, and like death and taxes we might as well accept it as gracefully as possible and try to adjust our lives to include this latest contingency. You've guessed it by now—it is the wage-hour bill, or the Fair Labor Standards Act, which was signed by the President the latter part of June to become operative in October.

E. F. Andrews, New York state industrial commissioner, was appointed by Mr. Roosevelt as administrator of the legislation. This has at least settled the controversy of Who's Who in this matter, and Andrews lost no time in announcing his policies, saying that he intended making full use of the provision for administering the law through state departments of labor, and that he may appropriate funds to state departments to enforce the act. Where no state labor departments exist, he will operate through some other state agency. "The Act will be administered through co-operation rather than police power, at least in the initial stages," he stated.

This puts industry on its honor and on the spot, to live up to the spirit of the act as well as the word, with a veiled threat of a policing system in case management resorts to schemes to distort the purpose of the bill.

In this writer's opinion we will not have such a hard time getting along with this Fair Labor Standards Act. Like an old Ethel M. Dell fiction plot, married to the brute against our will we may even fall in love with him before the story is over. As a matter of fact, those few organizations in the textile industry that will suffer from the wage-and-hour provisions in this bill are the wage-and-price chiselers who deserve to suffer.

Specific plans for the industry administration of the bill are still nebulous, but the Cotton Textile Institute is on the job; they have appointed a steering committee to take care of all problems in interim or until the plans for the specialized direction of the bill for our industry crystallize and are announced by the general administrator. The only thing to do regarding it just now is to do nothing. There is no reason for panic, for *sub rosa* efforts to take advantage of the wage floor until the bill becomes effective, for that will only react badly on the powers of administration and on your own industrial status, and there is every reason for calmness in considering logical plans toward co-operation in efforts to become more quickly and more easily adjusted to the harness when it is buckled on us.

What Else Congress Did to and for Us

Other legislation from our last Congress which affects in some degree the textile industry is briefly summed up:

Revision in the new Revenue Bill which makes the Capital Gains and Undistributed Profits provisions less onerous, although the principles of both are retained. There are many minor changes in the law, and the possible effects on a corporation can only be determined through a careful study.

A modified version of the Vincent Bill, dealing with stream pollution, passed after a part or all of sections 7(c), 8 and 9 were deleted.

The powers of the Federal Trade Commission have been broadened by giving it control of certain types of advertising.

The Robinson-Patman Act was amended to exclude from its provisions sales to educational, labor and charitable institutions, provided the purchases are made for their own use. Purchases by the Federal Government were previously excluded from the provisions of this act through a decision by the Attorney General.

The act providing for the authorization of further RFC loans to business is somewhat different than the previous act, and apparently allows a commission to change the character of security demanded, as well as removing the time limit for repayment.

The Maloney Bill provides for the regulation of over-the-counter stock sales, through voluntary registration.

The Bankhead Bill requires that all cotton ginners report to the Census Bureau each March the amount of cotton ginned, and under another bill, cotton seed statistics must be furnished the Department of Agriculture.

The Sino-Jap fracas seems to be reaching the point today where it will have definitely more influence on domestic cotton goods than just the boycott, with the announcement that Japan will curb the sale of cotton yarn and cloth. The latter part of June authoritative quarters disclosed that the Japanese Cabinet had decided on a series of measures restricting the domestic sale of pure cotton yarn and piece goods to meet the increased demand for raw materials resulting from the Sino-Jap conflict.

In an effort to reduce imports of raw cotton and increase exports of finished cotton materials, all sales of pure cotton yarn and cotton cloth for domestic purposes will be banned. Only the government-controlled export union will be permitted to sell cotton piece goods under the proposed regulations.

In addition the Ministry of Commerce and Industry has ordered the Japanese Far Eastern Cotton Goods Association of Osaka to restrict exports to China during the six-month period from June 20 to December 19 to 2,300,000 yards of cotton cloth and 500 bales of cotton yarn.

And two developments closer to home are vital: The Interstate Commerce Commission hearing, now under way, on freight rates; and, the proposed monopoly probe sponsored by President Roosevelt.

Freight Rate Hearing

At the former the ICC is considering the South's case against what it claims to be unfair and discriminatory freight rates. A favorable decision for the protestants will materially shove the South toward a position where it will be able to refute the President's idiom of the Number One Economic Problem of the USA.

In presenting the petition for removal of the present unfair freight rates by which it has for years been handicapped the South is simply seeking the same advantages which common carriers have been giving other sections of the country. And regardless of the Eastern cry that "labor is cheaper in the South" and hence freight rates should be higher to balance things for the East, the South is perfectly right in its stand that 500 miles is 500 miles whether it leads out of the South or into the South, and that it is extremely unfair for the other regions to have rates that enable them to ship their goods into the Southern area at a much lower freight cost than that area can ship its goods to such favored places.

The Monopoly Probe

On the latter—the monopoly probe—with the return to Washington of President Roosevelt, prompt appointment of the representatives to serve on the National Economic Committee, to investigate monopoly and other subjects, is expected. It will begin its work immediately. Its scope is unlimited.

The committee has $500,000 expense money, and is authorized to study, and hold hearings, on the subjects of monopoly and concentration of economic power in and financial control over production and distribution of goods; the causes of concentration and the effect of competition; the effect of the existing price system and price policies of industry upon the general level of trade, employment, profit and consumption; the effect of tax, patent and other Government policies upon competition, price levels, unemployment, profits and consumption; it is to recommend legislation on these subjects, including improvement of anti-trust policy and establishment of national standards for corporations engaged in Interstate Commerce, and to make a report at the next Congress.

FTC Rules on Shrinkage for Cotton Woven Goods

Several significant rulings, which met with conflicting reaction in the trade, appear in the final rules covering the shrinkage of woven cotton yard goods, announced by the Federal Trade Commission as promulgated on June 30, 1938.

The rules cover the use of formerly used terms in designating shrinkage, when total and complete shrinkage has not been effected; require that any residual shrinkage in the goods, after being "shrunk" or "pre-shrunk" shall be stated in percentages on invoices, labels, marks or advertisements; and require that in such designation, an accepted test be used in determining the residual shrinkage.

The direct or indirect use of such terms as "full shrunk", "preshrunk", "shrunk", "shrinkproof", "will not shrink", "mill shrunk", "double shrunk", "non-shrinkable", etc., on goods which have not been *fully* shrunk or preshrunk to the extent that no residual shrinkage is left remaining in such goods", is termed an unfair trade practice which is prohibited under the rules which have just been promulgated.

Such terms, however, may be used as descriptive of goods that *have* been shrunk or preshrunk to the extent that no residual shrinkage is left in the goods, provided that subsequent to shrinking, the goods have not been stretched or otherwise treated in a manner to restore shrinking properties or residual shrinkage.

When residual shrinkage, in any amount, remains in the goods—that is, when the goods are not *fully* shrunk—the amount of the residual shrinkage remaining in the goods must be indicated, and the test under which the residual shrinkage was or may be determined, must be designated. The commission's rules approve Commercial standard CS-59-36 as a standard shrinkage test for this purpose.

Carrying out its program of establishing fair trade practice rules for different phases of the textile industry, the commission was to hold in Washington on August 2, hearings for the final promulgation of rules covering the silk industry.

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Charles Bond Company Marks 50th Anniversary

In celebration of the 50th anniversary of his manufacturing and mill supply business, a surprise dinner was tendered on July 22 to Charles Bond, founder and president of Charles Bond Company, Philadelphia. The affair, planned entirely by employees, was attended by 138 officers and employees of the company and its three associated companies, Bond Foundry and Machine Co., Christiana Machine Company, and Bond Engineering Works, Ltd., of all of which Mr. Bond is also president.

Many of those present were members of the "Bond Quarter-Century Club" composed of those employees whose terms of continuous service cover 25 years or more.

Mr. Bond started in business on July 24, 1888, at 24 years of age. From that small beginning the business has grown by successive steps, and now embraces departments of manufacture and sale including the following: belting and textile leather, flexible couplings, stock gears, power transmission, and materials handling equipment. It has a Canadian affiliate, Bond Engineering Works, Ltd., in Toronto.

Philadelphia headquarters of the company are at 617-623 Arch Street.

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"Eversheer" Marquisette

A brand new type of marquisette, "Eversheer", which looks and feels the same after repeated washings, as well as being fresher and crisper looking to start with, was presented to the trade for the first time at the current Chicago drapery show by Fairclough and Gold of Boston and Forster Textile Mills of Chicago.

The process of manufacture, which is a patented one, controlled by Joseph Bancroft & Sons Company of Wilmington, Delaware, gives the material a fine luster and crispness, both of which are permanent. Tests have proved that the fabric, thus treated, is actually more durable—is just as bright and crisp after repeated washings as when brand new! Shrinkage in this new fabric is greatly reduced and curtains made of it can be taken down, easily laundered, ironed, and rehung, without any major adjustments.

"Eversheer" Marquisette is developed in such a way that the finish actually becomes part of the fibers of the material. It is weather-proof as no starch is used—which means that the finish does not wash out, that no starch is necessary in laundering "Eversheer" Marquisette. It is quickly washed in any lukewarm neutral suds and ironed while damp. It is also dry-cleanable.

In addition to the permanent luster and crispness, this process removes the fiber fuzz which normally clogs such a cloth.

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Crown Rayon Advertised Extensively in 1938

According to statistics, retail stores throughout the country during the first 6 months of 1938 have devoted more space to the promotion of Crown tested rayon merchandise than to any other brand of rayon. The name has been featured so frequently in store advertising that the total lineage for this period was 1,284,220 lines, or 160,174 more lines than the next well advertised brand.

At The Bishop's Birthday Party

W. D. Anderson, chairman and president of the Bibb Manufacturing Company, Macon, Ga., was 65 years old last month, and his fellow executives and members of the General Office force celebrated the occasion, on their annual picnic, presenting him a birthday cake decorated with 65 candles. Mr. Anderson is shown, right, blowing out the candles, and it is recorded that "most of these were blown out by Mr. Anderson with a single blow". At left is James H. Porter, vice chairman of Bibb, who was presented, on the same occasion, with an umbrella and a travelogue by the Bibb Girl Reserves, the presentation being made by Purchasing Agent W. M. Weaver, Jr.

COMMENT on the Cotton Market

New Orleans, July 16, 1938

THERE WAS more animation in trade circles during the past month due largely to the revival of activity in Wall Street, in the cotton goods markets, and the much smaller acreage planted to cotton in the United States this year. There was broad buying by trade and speculative interests. The sharp advance in security values reflected confidence in the future, and the big demand for cotton goods at higher prices represented governmental relief and trade wants. There was issued the first official cotton acreage estimate of the season In anticipation of this, there was short covering, followed by a wave of realizing, but the market recovered quickly. Returns to the government as of July 1, indicate that about 26,904,000 acres are in cultivation this year.

The estimated cotton area in cultivation July 1 this year represents 78 per cent of the 1937 acreage, when 34,471,000 acres were planted. This is a decrease of 22 per cent from 1937, 28 per cent lower than the 1927 to 1936 average and 16.8 per cent less than the 1933-37 average, the government reported.

Causes for Reduction

Among the causes for the sharp reduction in 1938, the government said, are the agricultural adjustment program, relatively low prices received for the 1937 crop, and difficulties in securing stands because of unfavorable weather. Decreases are shown in all states but the greatest reduction is in the area west of the Mississippi river.

Much notice was paid Washington reports that administration farm leaders indicated government price-bolstering efforts will be held to a minimum this year if the price of the commodity is around current levels on August 1 and hinted there may be no loan. Reasons given in the statements were that the administration is desirous of increasing exports and because the government now holds around 7,000,000 bales of the staple from previous loan programs for which there is no ready market. Legislation prevents its sale except at materially higher prices than currently ruling.

Loan Requirements

Cotton loans are mandatory under the new farm law when the August 1 price is 52 per cent or less than what has been declared by Congress to be a "fair" price. Such a level is considered to be around 16 cents. Thus, the price which would require government loans would be around 8.32 cents. It is also required under the farm law that loans be mandatory when a yield of 13,000,000 bales or more is indicated.

In 1900 the harvested acreage was 24,886,000, average yield 194.7 pounds

CENSUS REPORT—UNITED STATES

	Bales	
	This season	Last season
Consumption of lint in cotton growing States during June	375,000	568,000
Consumption of lint in New England States during June	55,000	92,000
Consumption of lint in all other States during June	13,000	21,000
Consumption of lint in the United States during June	443,000	681,000
Consumption of lint in the United States during May	426,000	669,000
Consumption of lint in cotton growing States, 11 months	4,504,000	6,141,000
Consumption of lint in New England States, 11 months	658,000	992,000
Consumption of lint in all other States, 11 months	145,000	234,000
Consumption of lint in the United States, 11 months	5,307,000	7,367,000
Mill stocks June 30	1,416,000	1,549,000
Stocks in public storage and warehouses June 30	9,697,000	3,090,000
Stocks in mills, public storage and warehouses June 30	11,113,000	4,639,000
Stocks in mills, public storage and warehouses May 31	11,644,000	5,399,000
Active spindles in cotton growing States during June	16,201,000	17,791,000
In New England States during June	4,341,000	6,028,000
In all other States during June	602,000	739,000
In the United States during June	21,144,000	24,558,000
In the United States during May	21,342,000	24,656,000

AMERICAN COTTON

	Bales	
August 1 to July 15	This season	Last season
Brought into sight (marketed)	15,213,000	13,916,000
Exports from the United States, including Canada	5,833,000	5,671,000
Spinners' takings, world	11,715,000	14,191,000
Stock at all U. S. ports, July 15	2,462,000	1,134,000

WORLD'S VISIBLE SUPPLY OF COTTON

	Bales	
July 15—American	This season	Last season
Stock at U. S. ports	2,462,000	1,134,000
Stock at 102 interior towns	2,679,000	962,000
Afloat to and at ports of Europe	1,236,000	657,000
Afloat to and at ports of the Orient	117,000	388,000
Total American	6,494,000	3,141,000
Total of other kinds	2,453,000	1,970,000
Total of all kinds	8,947,000	5,111,000

COTTON ACREAGE
Government's Cotton Acreage Report

State	Per Cent of 1937	——Area in Cultivation—— July 1, 1938 Acres	July 1, 1937 Acres	10-year average abandonment 1928-1937
Missouri	70	398,000	569,000	1.6
Virginia	65	44,000	67,000	1.4
North Carolina	82	911,000	1,111,000	1.0
South Carolina	77	1,313,000	1,705,000	1.3
Georgia	79	2,121,000	2,674,000	1.2
Florida	75	90,000	120,000	2.7
Tennessee	82	816,000	995,000	1.1
Alabama	81	2,191,000	2,705,000	0.9
Mississippi	78	2,726,000	3,495,000	1.0
Arkansas	80	2,479,000	3,099,000	1.7
Louisiana	79	1,244,000	1,575,000	1.0
Oklahoma	77	1,903,000	2,471,000	4.1
Texas	78	9,960,000	12,769,000	3.0
New Mexico	71	115,000	162,000	3.2
Arizona	71	212,000	299,000	0.5
California	57	356,000	624,000	1.2
Others	81	25,000	31,000	2.2
Totals	78.0	26,904,000	34,471,000	2.1

per acre, and the crop was 10,102,000 bales. This year there was in cultivation on July 1, 26,904,000 acres, and the acreage for harvest, after allowing for normal abandonment of 2.1 per cent would be about 26,340,000, the smallest since 1900. This figure (26,340,000 acres) will likely be used by the crop reporting board in calculating the August 8 government crop estimate. Private crop estimates range from about 9,856,000 to about 11,253,000 bales.

As to the future of the market, much will likely depend upon weather developments, progress of the growing crop, and the government's crop estimate, and of course general trade conditions and political developments. Crop accounts are generally favorable except in localities where too dry in the west and too wet in parts of the central and eastern belts which is favorable for weevil activity.

What the Southern Mills are Doing

Purchase of the Whitehall Mill, Athens, Ga., from the Oconee Textile Company, has been announced by R. N. Fickett and Hugh Hardin, principal stockholders in the Fickett Cotton Mills, Inc. The Whitehall Mill has been idle since April, 1935, but will be put into operation by the new owners immediately. Cotton yarns, mop yarns, and mop heads will be manufactured. Work on renovating the mill has already begun.

Sale of the old Carolina Rayon Mills plant, Alamance, N. C., has been announced by J. H. Harden, holder of an option on the structure. Identity of the corporation which bought the plant, other than it is a nationally known concern, has not been divulged. It is understood, however, that plans are being made for an early resumption of operations.

Marshall Field & Company, manufacturing division, Spray, N. C., have awarded a contract to John Smith & Sons, Leaksville, N. C., for the erection of a community building in the center of the Fieldale, Va., business section, in which city are located plants of the company.

Smithfield (N. C.) Manufacturing Company has completed its renovation program, involving a modern machinery set-up and including drawing frames, winders, and the addition of 10 cards. Also the latest type of vacuum card stripping device has been applied.

Standard-Coosa-Thatcher Company, Chattanooga, Tenn., has installed four package dyeing machines and the necessary auxiliary equipment, the machines being supplied by the Gaston County Dyeing Machine Company, Stanley, N. C.

The Thread Mills, Inc., are consolidating their Monticello, Ga., plant with the main factory in Gastonia, N. C. The equipment of the Monticello branch will be transferred to Gastonia at an early date.

Valdese (N. C.) Manufacturing Company has installed four package dyeing machines and necessary auxiliary equipment, furnished by the Gaston County Dyeing Machine Company, Stanley, N. C.

Cannon Mills Company, Plant No. 8, China Grove, N. C., is undertaking a complete modernization program in its mill village. Houses are being re-roofed, re-painted, and new electric lines are being erected.

Steele's Mill, Rockingham, N. C., is having an excavation made under the weave room which will be used at present for storage purposes. Later, machinery may be installed therein, it is reported.

Lowell Bleachery, South, Griffin, Ga., is constructing a 3-story mill addition measuring 102x110 feet. A new boiler house 50x175 feet is also under construction. Total expenditures will represent more than $100,000.

Burlington (N. C.) Mills Corporation have installed 48 of the latest type dye beams, furnished by the Gaston County Dyeing Machine Company, Stanley, N. C.

Shelby (N. C.) Cotton Mill will build a two-story brick addition 50x100 feet on the west side of the main mill building to be used for warehouse and cloth room space.

Cannon Bed Spread Company, Ringgold, Ga., which opened a plant in that city several months ago, has purchased a tract of land on the outskirts of town and is erecting a $10,000 plant.

Cayuga Linen & Cotton Mills, Lexington, N. C., is reported to be reverting to its former status as a twine mill; new twisting machines are being installed.

Springs Cotton Mills, Fort Mill, S. C., are having the card flat brushes repaired by the Gastonia Brush Company.

New Publications of Textile Interest . .

(These publications may be secured direct from the manufacturer or through COTTON.)

Commercial Credit Company, Baltimore, Md. "Capital at Work", a story in booklet form of the outstanding commercial banking service available to manufacturers and wholesalers in the company's open account financing and the extra protection afforded by the new limited loss clause.

Dodge Manufacturing Corporation, Mishawaka, Ind. "More and Better Cloth" and "Two Sure Ways to Cut Costs", being a description of the Dodge loom drives and loom bearings.

Wirth Sales, Inc., 110 East 27th St., New York City. Folder illustrating and describing new high speed warp knitting loom, Model HSK 500. Gives salient points of operation.

Link-Belt Company, 307 N. Michigan Ave., Chicago, Ill. Booklet, 12 pages, No. 1652, descriptive of company's complete line of Shafer radial-thrust single-row and double-row roller bearings in the naked or unmounted form. Gives dimensions, weights, load ratings, etc.

Chicago Metal Hose Corporation, Maywood, Ill. 26-page catalog of flexible metal hose for various purposes. Applications illustrated and specifications given.

The Goodyear Tire & Rubber Company, Inc., Akron, O. New illustrated 56-page catalog of mechanical goods for various industries. Information given on construction and application; contains valuable hints on proper care of rubber belting and maintenance of belting.

American Aniline Products, Inc., 50 Union Square, New York City. Attractive color card book, "The Dyeing of Wool with Amacid Colors." Contains methods for dissolving dyestuffs, dyeing methods, fastness qualities, etc.

The Brown Instrument Company, a division of Minneapolis-Honeywell Regulator Co., Philadelphia, Pa. "Tuning In", a folder descriptive of the air-operated controllers, adaptability of controllers to the varied control requirements, etc. Installations pictured.

Haveg Corporation, Newark, Del. Bulletin N-1 on the company's cold setting acid resistant cement. Gives properties, directions for use, and chemical resistance table.

Reeves Pulley Company, Columbus, Ind. Catalog No. G-384 on variable speed control. Introduction goes into reason for using variable speed control; illustrates various types, pictures actual installations.

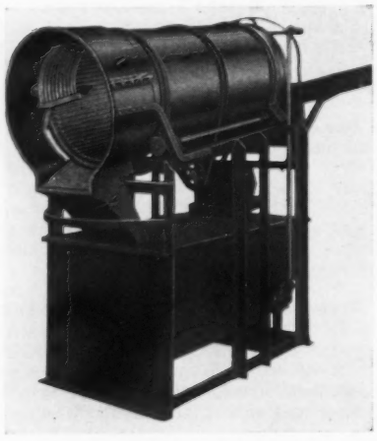
Commercial Credit Company, Baltimore, Md. "Credit and Finance Today", a resume of the commercial banking services offered manufacturers, distributors, and dealers by this company, now in its 25th anniversary year. Summarizes some of the most important financial services rendered.

New Textile Equipment and Materials

New Basic Principle in New Yarn Conditioning Machine

Frank G. North, Inc., Mortgage Guarantee Bldg., Atlanta, Ga., are marketing a new machine for conditioning yarn, known as the "Rotoconditioner", which involves an entirely new principle of treating the yarn. No aprons are used in conveying the bobbins through the machine, the delivery end of which is shown in the accompanying illustration.

The bobbins to be conditioned are emptied onto a tray at the back of the machine, which places them in the cylinder of the machine, which is slightly inclined toward the front, and which rotates at a slow speed, producing a gently tumbling action on the bobbins, which, with the slight incline of



The "Rotoconditioner"

the cylinder, causes them to move constantly through the cylinder to the delivery end, where they are ejected into a truck. Several projections inside the cylinder aid the "tumbling" action of the bobbins.

Stationary spray heads situated within the cylinder, supplied from a tank underneath by force pump, spray the conditioning fluid on the bobbins as they move through the cylinder. The "tumbling" action of the bobbins, it is explained, causes all of the bobbin surface to be exposed uniformly to the spray.

The frame of the machine is constructed of steel, and the rotating cylinder and fluid tank are made of aluminum. The cylinder is driven, in its slow rotation, by a ⅓-hp motor through a belt around a hoop around the center of the cylinder. Other hoops, one at each end, provide a bearing surface for the cylinder, and run on rollers equipped with anti-friction bearings. The pump in the fluid tank is driven by a separate ½-hp motor.

The inside of the cylinder, through which the bobbins pass, is constructed of corrugated aluminum. The corrugations aid in the tumbling of the bobbins, and also provide wells for the fluid so there will be no excess fluid standing in the bottom of the cylinder. Thus, it is pointed out, the bobbins are exposed only to the fluid coming direct from the sprays. Surface tension causes the excess fluid in the corrugations to run to the lower end of the cylinder, where provision is made for draining and returning it to the fluid tank by gravity.

The manufacturers emphasize two points in connection with the machine: the basically new principle obviates the use of moving aprons; and the slightly inclined, slowly rotating cylinder insures thorough, uniform spraying on each bobbin on all sides, as well as a constant movement of the bobbins through the machine, without crowding or congestion.

The machine weighs approximately 1,000 pounds, is about 5 feet high, 5 feet long, and 3 feet wide. The interior of the cylinder is 48 inches long, and 22 inches in diameter. The capacity of the machine is in line with normal mill requirements; a bobbin remains under the spray approximately 10 to 15 seconds. The degree of treatment may be governed by changing the fluid formula or by regulation of the spray heads.

◆

"Speedial" Handwheel

Reeves Pulley Company, Columbus, Ind., has effected an improvement in variable speed control; this is the "Speedial" handwheel, offered as optional equipment in place of the regular speed control handwheel and the dial type indicator for all sizes of variable speed transmission and varispeed motor pulley and Motodrive with ceiling equipment only. It may also be substituted for the standard handwheel, hand crank speed indicator on these units already in service. The Speedial accurately registers speed settings of these different units. The actual indication is a definite number of turns and fractions of turns of the shifting screw. These are read by the operator as he turns the Speedial. While the standard Speedial is calibrated in turns of the shifting screw, space is available on the dial for the user to write, in pen or pencil, his own calibrations in whatever corresponding units he prefers. Parts are readily accessible and may be easily and quickly removed and replaced. The complete unit is installed or removed just as quickly as the standard handwheel.

New speed control

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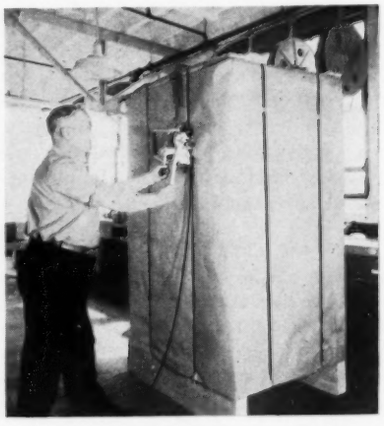
New Steelstrapping Tool

Acme Steel Company, Chicago, Ill., has announced a new automatic seal-feed tool for quickly applying ⅝-inch



Steelstrapping tool in use

and ¾-inch steelstrap to heavy shipments, including skid loads. Designed for easy operation, one lever tensions while the other seals the joint and cuts the strap from the coil without waste. The tool is remarkably simple to handle. Although of different design, this new tool, known as the Acme No. 2 steelstrapper, is the companion to the No. 1, which is made to handle strapping in widths of ¼-inch, ⅜-inch, and ½-inch. The automatic seal feed feature, which is exclusive with Acme, saves the time of applying seals by hand. Seals for the new No. 2 are furnished in clips of 50; and an equal number of steelstraps can be applied before reloading the seal magazine. Another advantage of the new steelstrapper is the unlimited strap take-up for maximum tension. The tool can be used on the side of a package, on top, or mounted to a conveyor for fast-moving production lines.

FACTORING IS "*Business Preparedness*"

When the business trend was downward, good business executives took steps to prepare for hard going. They cut overhead —conserved cash at every point.

It is equally important to be prepared for an up-swing . . . ready to take advantage of every profitable sales opportunity.

It takes money to finance sales on terms. Right now, when indications point to increasing activity a Textile factoring contract will clear away your financial limitations and place your business on a cash basis without affecting your normal trade terms.

Selling is today's big job. Prepare for greater sales efficiency. Investigate the advantages offered by Textile factoring service.

TEXTILE BANKING COMPANY

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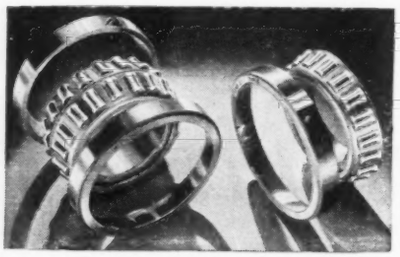
Affiliated with Commercial Credit Company, Baltimore • Capital and Surplus Over $64,000,000

NEW ENGLAND REPRESENTATIVE: EDMUND H. LELAND, CHAMBER OF COMMERCE BUILDING, BOSTON, MASS.

Unmounted Roller Bearings by Link-Belt

Link-Belt Company, 307 N. Michigan Ave., Chicago, Ill., has placed on the market a complete line of Link-Belt Shafer radial-thrust single-row and double-row roller bearings in the naked or unmounted form. Literature describing the new line of bearings stresses: Free rolling action with unimpaired loading capacity; no provision need be made for misalignment in the housing or mounting; thrust capacity is provided by the roller and race-way shapes and by the angular position of the curved rollers between curved races; radial or thrust or any combination of radial-thrust loads will be carried equally as well and on the same full contact area under all conditions of alignment; there is no possibility of rollers pinching or binding, and no need for auxiliary means of taking the thrust.



Unmounted roller bearings

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Tufferized Process

Howard Bros. Mfg. Company, 44 & 46 Vine St., Worcester, Mass., makers of card clothing, have announced radical improvement in the method of cutting and setting card clothing wire, said to still be dependent upon the use of the patented Tuffer foundation. According to the company, Tufferized precision parts have been in an experimental and development stage for three years in the plant of the concern; in its perfected form it cuts the wire clean and free from burrs. This gives added life and service to the card clothing because it minimizes side and top grinding before delivery to the mill. The next improved operation allows uniformly shaped wires with every one square at the crown and parallel to the others. The new process is said to be more significant for brushes which are not ground, and for fancies. The new method of setting makes both wires stand up straight. Each pair of wires sets flat and square into the foundation and needle point holes are not enlarged a fraction by burrs on wire passing through the foundation. The new Tufferized card clothing will set tighter and lay flatter on the cylinders, thereby insuring a more even setting of the rolls, according to the manufacturers.

Improved Speed Transmission

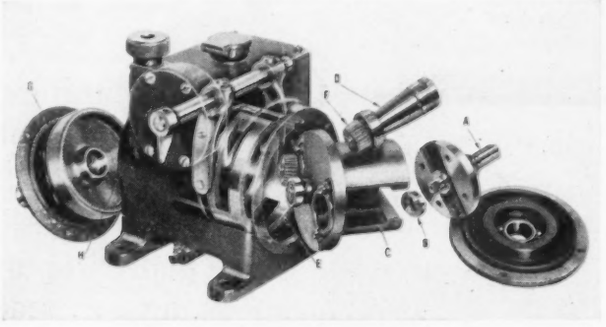
Graham Transmissions, Inc., 2711 North 13th Street, Milwaukee, have announced new models of the Graham variable speed transmission with important additional features which broaden the scope and application of this type of equipment.

By means of an ingenious tractional device, which automatically keeps the drive pressure in proportion to *both* the load and the speed, the Graham maintains full torque all the way to zero speeds. It transmits full motor power over a range of 4:1, and gives speeds in infinite steps from any desired maximum all the way to zero and reverse. Speed is adjustable, either stationary or running.

The photograph illustrates the essential elements in the drive. Two conical rollers (D) are carried in the carrier (C) spaced 180 degrees apart. The rollers bear under pressure against the contact ring (E) which surrounds the carrier. The position of (E) can be varied axially by means of the control wheel (H). The carrier (C) is attached to the drive or input shaft through the medium of the cam (B). The rollers (D) carry at their small ends pinions (F) which mesh with a ring gear (G) attached to the driven or output shaft.

In operation, as the shaft (A) is rotated the cam transmits this rotation to the carrier (C) and at the same time applies a pressure to the ring which automatically conforms to the requirement of both the speed and the load. This pressure between the rollers and the ring causes the rollers to rotate about their own axes, and in turn to drive the output shaft through the pinions and gear (F and G). The rate of the rotation of the rollers, and consequently the speed of the output shaft, depends on the position of the contact ring (E). The speed of the driven shaft is highest when the ring is in contact with the largest diameter of the rollers and lowest when it is in contact with the smallest diameter.

New design of variable speed transmission . .



In textile operations, such as spinning, twisting, cabling, slashing, warping, etc., the ability of this unit to start at zero speed and maintain constant torque in accordance with the load both reduces end breakages and distributes those that do occur over the entire run. Thus the operator is not overtaxed with breakage at the beginning of the run and consequently is enabled to operate more machines. Uniformity of product also is increased by the ability of the unit to change speed with extreme sensitiveness so as to maintain a constant tension on the material in work.

Rust Eliminated—Use Stainless Clad Steel Take-up Reels

Manufacturers of sash cord have found that rust spots following the final finishing and polishing operation can be eliminated by the use of take-up reels constructed of stainless clad steel. Such reels have recently been manufactured by the Mossberg Pressed Steel Corporation, Attleboro, Mass. After the sash cord is braided on a solid cord machine, it is finished and polished on a multiple strand finishing machine. The cord is immersed in a solution containing starch and is passed through the polishing head in multiple strand. From the polishing head the sash cord, which at times still contains an amount of moisture, is taken up on the reels. Before using the Mossberg reels, the sash cord in contact with the sides of the reels developed rust spots, which have been eliminated with the stainless clad steel reels. The stainless steel was furnished to Mossberg by the Ingersoll Steel & Disc Division, Borg-Warner Corp., Chicago, Ill.

These reels were photographed in the plant of the Mossberg Pressed Steel Corporation. They are 32 inches in diameter, 20 inches wide, with a 12-inch-diameter drum. The heads are grooved to accommodate a cord friction drive and are formed of 1/8-inch IngAclad, having a 20 per cent layer of 18-8 stainless steel bonded to ordinary steel, as supplied by the Ingersoll Steel & Disc Division, Borg-Warner Corp., Chicago, Ill.

. . . and you get more for your money today with the modern roll covering—CORK

THERE'S no denying progress either in travel or in the textile mill. New materials, new methods replace older, less efficient ones. That is why today more than 6,000,000 active spindles are running on Armstrong's Cork—the modern roll covering material.

Mills are buying Armstrong's Cork Cots today because they save them money. They save money because they last longer. For after serving their normal life on the spinning roll, these cots can be made new again by rebuffing. But that's only part of the story. With Armstrong's Cork Cots you will get better running work and stronger, more uniform yarn. You will get less eyebrowing, fewer top roll laps, less clearer waste, less end breakage.

Why these advantages? First, because the physical properties of cork fit it ideally for cotton spinning. Second, because the Armstrong Cork Cot is a modern fabricated product, scientifically controlled through every exacting step of its manufacture. That's why this roll covering is uniform—each cot like every other cot and absolutely uniform from end to end and throughout its entire wall thickness.

You pay no more for the advantages of Armstrong's Cork Cots than for ordinary roll covering material. And you make additional savings in lower assembly costs.

Right now is a good time to find out how your mill can benefit with Armstrong's Cork Cots—the modern roll covering. Let the Armstrong salesman show you production figures of mills spinning your range of numbers. Or write today to Armstrong Cork Products Co., Industrial Division, Textile Products Sec., Lancaster, Pa.

ARMSTRONG'S *Extra Cushion* SEAMLESS CORK COTS

CORK PRODUCTS SINCE 1860

Recording Psychrometer

The Foxboro Company, Foxboro, Mass., has announced a recording psychrometer that is said to save guesswork, uncertainty, and worry. It is not an air condition controller, but is a recorder which furnishes a continuous, accurate, written record of the relative humidity in any work room where it may be located. In plants with modern air conditioning systems it serves as an independent check on the operation of the other equipment, warning of failure or imperfect adjustment. The instrument with its continuous record may be located as far as 200 feet away from the bulbs, which are mounted on the water box which keeps the wet bulb wick saturated. It is easily installed and is said to be an instrument which will give long and useful service.

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Improved Builders for Spinning Frames and Light Twisters

Saco-Lowell Shops, Boston, Mass., have completely redesigned its builder for spinning frames and light twisters. It has been modernized and constructed to meet the severe conditions caused by the use of larger rings, longer bobbins, and longer frames. Structurally, it has been strengthened by the use of a stiffener girt, which also serves as a support for bearings at the outer end of the builder arm fulcrum and cam shaft. Large hardened steel chains have been substituted for the ordinary commercial chains and the reverse shaft and quadrant have been eliminated. The operation of the new builder is described in the May 1938 issue of the company's "Bulletin".

◆

New Products Announced in Circulars by Ciba

Ciba Company, Inc., P. O. Box 25, Station D, New York City, representatives of the Society of Chemical Industry, Basle, Switzerland, has announced several new colors described in circulars made available by the company. Diazo Fast Blue 4BW is noted for its fastness to light and washing and is suited for dyeing all combinations of cotton and viscose rayon. Lyofix DE is a new textile auxiliary of the Sapamine KW class, recommended for after treatment of direct dyeings to increase their fastness to water. Vat printing Black GL, Micro powder and Micro paste furnishes a deep black print of very good fastness to light, washing, and chlorine. This color is said to print without any special process; it re-oxidizes quickly after ageing so there is no danger of bleeding during washing. For cotton and rayon printing it is applied according to the usual methods. Cibanone Blue 2R, Cibanone Dark Blue MBA, and Cibanone Black BAN double cone are colors shown on materials woven in the grey and later subjected to kier boil and bleach. A card also shows Cibanaphtols and bases on cotton yarn, and contains full details regarding affinities of the various products. Chlorantine Fast Green CLL patented is shown on cotton yarn and a number of other products, including various types of rayons. Sample cards describing the various colors may be obtained from Ciba Company, Inc.

New Aluminum Floodlight

Benjamin Electric Manufacturing Company, Des Plaines, Ill., has made available the new Aloz-Lite, a new medium spread type floodlight made of Alzak aluminum and especially suitable for the floodlighting of yards, construction areas, and other outdoor locations. It is designed for use with 750, 1000, or 1500 watt lamps. It has a symmetrical beam with a spread of approximately 65 degrees. The unit is weather-proof.

TIMELY NEWS ITEMS WITH A TEXTILE SLANT . . . .

Gulick Chairman of Board of National Oil Products Co.

Charles P. Gulick, founder and former president of the National Oil Products Company, Harrison, N. J., chemical manufacturers, has been elected to the newly created office of chairman of the board. He is succeeded as president by John H. Barton, formerly vice-president. Thomas A. Printon, former general sales manager of the industrial division, was elected vice-president in charge of industrial sales. Other officers of the company are P. S. Brown, vice-president; G. Daniel Davis, vice-president; Ralph Wechsler, treasurer; and, Albert A. Vetter, secretary.

◆

New Rayon Tire Cord Is Cotton Product

U. S. Rubber Products, Inc., 1790 Broadway, New York City, is making the new rayon cord truck tire entirely of cotton. Ordinarily, rayon is manufactured from cellulose derived from wood pulp, but in the U. S. Raymaster truck tire the rayon is made of 100 per cent cotton. The new construction is said to provide greater carcass strength and impact resistance at operating temperatures. Except for its silky surface, the new cord appears much the same as the conventional cotton cord. It is twisted by the same processes in the company's factories. However, the strands which make up each rayon cord are of continuous length—they are not spun from shorter fibers. Each strand runs the length of the cord, and being of uniform gauge throughout its length, it is said to be free from friction caused by uneven strands rubbing against each other. This action, explained by the makers to have a weakening effect on the tire cord, is said not to be found in tire constructed of rayon cords.

Distributor for Republic

Republic Rubber Division, Lee Rubber and Tire Corporation, Youngstown, O., has announced that Moore Dry Kiln Company, Jacksonville, Fla., is distributor in that territory of mechanical rubber products manufactured by the company.

◆

Canariis Joins Pomona Pump Co.

Svend A. Canariis, formerly Waterworks Engineer for the Westinghouse Electric & Manufacturing Co., in East Pittsburgh, Pennsylvania, has been appointed Waterworks Engineer for the Pomona Pump Co., Pomona, California.

In his new position Mr. Canariis will make his headquarters in Pittsburgh, Pennsylvania. His activities will, at the present, consist of special application engineering in the eastern states and foreign countries.

◆

"American Wool Handbook"

American Wool Handbook Company, New York City, has recently published the "American Wool Handbook" by Werner von Bergen and Herbert R. Mauersberger, which is the first attempt for a long time in America to consolidate existing old and much new information concerning the growing of wool, its marketing, grading, and use in the woolen and worsted trade. It is a reference book, written in simple and easily understandable language, reflecting primarily American technic and the practical art of converting wool into yarns and fabrics. Preface to the book is written by Arthur Besse, president, National Association of Wool Manufacturers. The book contains 864 pages, 350 illustrations, and comes in the 5½-inch by 7¾-inch size at $3.95 per copy in this country and Canada, and $4.75 in other countries.

FOR 100 YEARS GILLEATHER HAS CONSISTENTLY PASSED THE 12 POINT TEST WITH HONORS

For example, unlike leather substitutes, GILLEATHER will not flatten out or flute over the week-end, or even after standing for weeks or months. This is a natural characteristic of good leather, which is one of the most resilient substances known. Furthermore, because this feature means far less ends down when starting up, it is one reason why the ULTIMATE cost of GILLEATHER is low.

Because it can answer "yes" to all questions of the 12 point test, GILLEATHER has outlived over 600 leather substitutes that may have surpassed it in one or more respects, but not in ALL respects. And a good roller covering MUST be able to answer "yes" to all 12 points.

Let us tell you the COMPLETE Gilleather story. Write and ask us.

GILL LEATHER COMPANY, SALEM, MASS.

THE 12 POINT TEST

1. Does it automatically stop spinning when it makes bad yarn?
2. Does it retain its cushion and resiliency in low temperatures, as over the week-end in winter and as long as it will draft?
3. Does it resist flattening or fluting over the week-end?
4. Does it require a standard diameter arbor, thus eliminating costly changes?
5. Is it impervious to excessive humidity?
6. Does it produce a minimum of eyebrows?
7. Does it eliminate lap-ups as long as it will make good yarn?
8. Does it eliminate cockled yarn, other factors being correct?
9. Does it produce yarn of maximum strength for a given staple, other factors being correct?
10. Does it require a minimum of attention?
11. Does it function properly ALL the time until worn out?
12. Has time proved it any better than the 600 odd "improved" roller coverings that have come and gone?

SHEEP and CALF SKIN GILLEATHER *for* TOP ROLLS

Southern Representatives

Gastonia, N. C.—W. G. Hammer
Greenville, S. C.—Ralph Gossett
Greenville, S. C.—W. J. Moore
Dallas, Texas—Russell A. Singleton
Griffin, Ga.—Belton C. Plowden

John Hetherington & Sons, Inc., Agents for Micrometer Setting Gauge for Grinding Rolls

John Hetherington & Sons, Inc., 72 Lincoln St., Boston, Mass., are sole agents in this country for the new micrometer setting gauge for grinding rolls on cards, a development of Dronsfield Bros., Ltd., Oldham, England, which was described in detail and illustrated on page 72 of the July issue of COTTON. The gauge offers a scientific method of setting traverse grinding rolls for cards, eliminating the "by ear" method. It may also be used for testing surfaces of card teeth for parallelism and cylindricity, and for testing the bare surfaces of cylinders and doffers before grinding with the bare cylinder grinder.

◆

Columbia Alkali Corp. Builds New Research Laboratory

Columbia Alkali Corp. (Columbia Chemical Division of the Pittsburgh Plate Glass Co.), Barberton, Ohio, manufacturers of alkali products for the textile and other industries, have completed and occupied a new, up-to-date research laboratory, with a number of special features.

The building is of brick, colonial in design, with limestone trim. Floors are of re-inforced concrete on steel I-beams. Glass in various forms has been largely used. All glazing is of plate glass, the foyer is partitioned with Lumite glass block, glass partitions are used between the main laboratory room and the micro-analytical laboratory. The laboratory is heated by thermostatically controlled radiation, in which glass wool is used in filtering the air. Tempered glass for special hoods and safety laminated glass shields, bound with metal edges, are used for surrounding hazardous operations.

The new laboratory is really several laboratories in one. The top floor is divided into two spacious rooms for the inorganic and physical section and the organic section; as well as a smaller room which houses the micro-analytical laboratory. The floor below contains the offices, library, and a small laboratory and analytical laboratory.

Modern equipment is used throughout the plant. Industrial projects which require the handling of materials are carried on in a special department. The basement is devoted to pilot plant work.

◆

Wilson Made Sales Manager The Terrell Machine Co.

John J. Wilson, formerly representative in the Charlotte territory for The Terrell Machine Company, Charlotte, N. C., has been made sales manager of the company. He is succeeded in the Charlotte territory by W. S. Terrell, who, in turn, is replaced in the Greenville territory by Irwin P. Graham. R. Bigham Smith continues to serve the Atlanta territory.

◆

Amco Celebrates 50th Anniversary in 1938

American Moistening Company, 260 West Exchange St., Providence, R. I., is celebrating its 50th anniversary this year. Commemorating the event, a folder has been prepared showing the service to the industry, and depicting the development in humidification engineering over a period of a half century. Amco research has been and is today continuous—seeking developments as a service to the industries.

◆

Dixie Photos

Dixie Mercerizing Company, Chattanooga, Tenn., has published an attractive and interesting brochure of photographs showing the employees of the company at work and at play. Included are shots of the plants, village, medical and dental clinics, games, and actual mill operations. The brochure tends to humanize the company's relationships with both its customers and employees. Besides being clever in composition, it presents the company's side of the story in a novel manner.

Octyl Alcohol, Anti-Foaming Agent

Recent investigations by Carbide and Carbon Chemicals Corporation, 205 East 42nd Street, New York, N. Y., have shown that correct concentration is essential for best results in using Octyl Alcohol to prevent foaming in many textile operations. For certain applications it was found that the use of too high a concentration caused foaming instead of preventing it. This condition was quickly corrected when the concentration of Octyl Alcohol was reduced. The optimum anti-foam concentration was obtained when a saturated solution of Octyl Alcohol and water was formed—about 0.14 per cent by weight of Octyl Alcohol at 25 degrees C. It is believed that this rule may hold for other aqueous solutions and that more Octyl Alcohol will be required to prevent foaming of solutions in which it is more soluble than in pure water.

In the grinding of dyestuffs to a fine particle size, where water is used as the medium for the grinding operation, ¼ per cent by weight of Octyl Alcohol not only gives a more uniform grind but also considerably reduces the time required for grinding.

Many textile printers are now using Octyl Alcohol for defoaming their print solutions. In every case, they report that the incorporation of a fraction of a per cent of Octyl Alcohol in their standard pastes has successfully reduced foaming.

In an air conditioning unit which scrubs out the dust by means of a water spray, it has been found that the addition of 0.01 to 0.05 per cent of a wetting agent such as "Tergitol" penetrant 7 greatly lowers the dust count. However, due to the lowered surface tension excessive foaming results unless Octyl Alcohol is used to the extent of 10 per cent of the weight of wetting agent. In fact, the tendency to foam in almost every aqueous bath, can be reduced and economies can be realized by the use of small amounts of Octyl Alcohol.

Left, exterior of new Columbia Alkali laboratory building; right, one of the laboratories

Consult

CORN PRODUCTS SALES COMPANY TECHNICIANS

on

YOUR WARP SIZING AND FINISHING PROBLEMS

●

SOUTHERN TEXTILE OFFICES

Greenville, S. C.	Spartanburg, S. C.	Greensboro, N. C.	Atlanta, Ga.	Birmingham, Ala.
Woodside Building	Montgomery Building	Security Bank Building	Hurt Building	Comer Building
John R. White	J. Cantey Alexander	W. R. Joyner	C. G. Stover	L. H. Kelley
General Manager	Asst. Gen'l. Mgr.	Manager	Manager	Manager

●

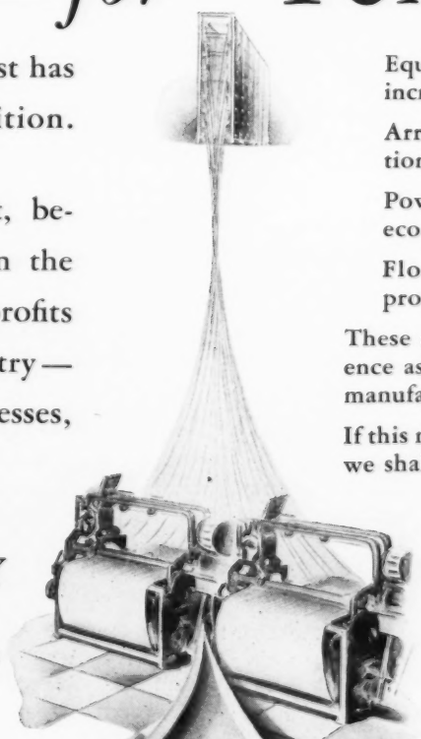
Serving the Textile Trade for Over a Quarter of a Century

CORN PRODUCTS SALES COMPANY, 17 BATTERY PLACE, N. Y.

New Paths to Profit —*for* Textile Mills

The plant which operates on low cost has a marked advantage over competition.

Low cost is the first path to profit, because every economy is a profit in the making, but these economy-born profits —especially in the Textile Industry— involve a multitude of steps and processes, among which are:—



Equipment that will improve production and increase earning power.

Arrangement of equipment for flexible operation in peak and valley loads.

Power application to achieve efficient and economical use.

Flow of materials and of manufacturing process to cut cost.

These are important paths to profit which our experience as Engineers can open up or make smoother for manufacturers of textiles.

If this matter of profit through economy is of interest, we shall be glad to discuss the possibilities with you.

J. E. SIRRINE & COMPANY

Engineers

Greenville South Carolina

Textile Mills	Tobacco Factories	Paper Mills
Appraisals	Steam Utilization	Rayon Plants
Reports	Water Treatment	Power Plants
Surveys		

PERSONAL NOTES
about Men You Know

JOSEPH C. COBB, who returned last month from a trip to Brazil with his father, F. GORDON COBB, has accepted a position as manager of a fine-yarn mill which is to be built in Sao Paulo, Brazil, immediately. Messrs. Cobb made the trip to South America for the firm interested in the erection of the plant, and as a result of their report, plans are now under way for its construction. Joseph Cobb, whose address is Pecan Terrace, Easley, S. C., will remain in the United States during the purchase of machinery, etc., and it is expected he and his family will move to Sao Paulo about September 15, at about the time construction on the mill building will be started.

JAMES G. HANES, president, Hanes Hosiery Mills, Winston-Salem, N. C., has retired from this position to become chairman of the board. He is succeeded by JAMES N. WEEKS, general manager of the company.

JAMES C. PLATT, JR., son of the agent of Chicopee Manufacturing Corporation, Gainesville, Ga., who was graduated in textile engineering at the Georgia School of Technology, Atlanta, Ga., this summer, has become connected with the Aragon (Ga.) Mills.

JAMES C. CLONINGER, general manager of Neely Manufacturing Company, York, S. C., has assumed in addition the position of manager of the Cedartown (Ga.) Yarn Mills, recently purchased by Hyde Rakestraw & Company. He succeeds ROBERT A. MORGAN, who has resumed his engineering work with Moore & Thies, Charlotte, N. C. L. V. ANDREWS, until recently superintendent of the Martinsville (Va.) Cotton Mills Company, has become superintendent of the Cedartown plant, succeeding JAMES A. HENRY.

CARL C. FORESTER, overseer of weaving at the Border City Mills, Fall River, Mass., has retired after spending 60 years in the cotton manufacturing business, 40 of these years being with the Border City Mills. Given a surprise party at his home by the employees of the mill, Mr. Forester was presented with many gifts, including an easy chair and a smoking stand and pipe. He is succeeded by Herman W. Gersch.

HERMAN WEISZ, graduate of Alabama Polytechnic Institute, Auburn, Ala., in 1938, has become connected with the Rock Hill (S. C.) Printing & Finishing Company.

CHARLES VERNER, graduate of Clemson (S. C.) College, has become assistant superintendent of the Calhoun Mills, Calhoun Falls, S. C.

J. W. STUART has become superintendent of the Trio Manufacturing Company, Forsyth, Ga.

FORREST W. PHILLIPS, formerly with Styles-Worral, Inc., and R. H. Styles Company, has become associated with Rex Rayon & Thread Co., Inc.; he will also sell regular carded and combed knitting and weaving yarn and mercerized and spun rayon yarn.

WILLIAM FORSTEN has been made general manager of the new S. & F. Hosiery Mills, Dayton, Tenn.

T. F. CUDDY, formerly of Mount Holly, N. C., has become superintendent of the Pickett Cotton Mills, High Point, N. C., succeeding W. A. HUNT.

EDWARD L. WHITFORD, formerly in charge of production and fabric development with Chopak Textile Company, Inc., has joined Franklin Rayon Corporation, Providence, R. I., and will assist in the promotion of fabrics from various synthetic yarns; his services will also be available to the company's customers.

Obituary

DR. HOMER GAGE, 77, president, Crompton & Knowles Loom Works, Worcester, Mass., passed away suddenly at his summer home July 3. He was widely known as a philanthropist. The retired surgeon was elected a director of the company in 1900; twenty years later he was elected president, succeeding LUCIUS J. KNOWLES. In 1927 Dr. Gage was decorated with the French Legion of Honor and later was made a commander of the Legion. He had served 27 years as treasurer of the Worcester Polytechnic Institute.

THOMAS H. WHITE, SR., 75, chairman of the board of directors of the Aragon-Baldwin Cotton Mills, with plants at Rock Hill and Whitmire, S. C., passed away the latter part of June after an illness of three weeks.

RUDOLPH G. JOHNSTONE, 35, Spartanburg, S. C., general superintendent of the Spartan Mills, Startex Mills, and Gaffney (S. C.) Manufacturing Company, was fatally injured July 7 when his automobile left the highway near Blacksburg, S. C.

GARLAND O. GOODWIN, 35, formerly purchasing agent of the Mooresville (N. C.) Cotton Mills, succumbed June 22 to injuries received in an automobile accident.

JOHN R. FEDERLINE, SR., 71, well known Belton, S. C., textile man, passed away June 20 following an illness of three months. He had been overseer of spinning at the Belton Mills for the past 20 years. Mr. Federline was the father of J. R. Federline, Jr., of Lanett Mill Division of West Point Mfg. Co.

JAMES S. COTHRAN, southern sales agent for Link-Belt Company and other machinery manufacturers, passed away at his home in Charlotte, N. C., at the age of 69.

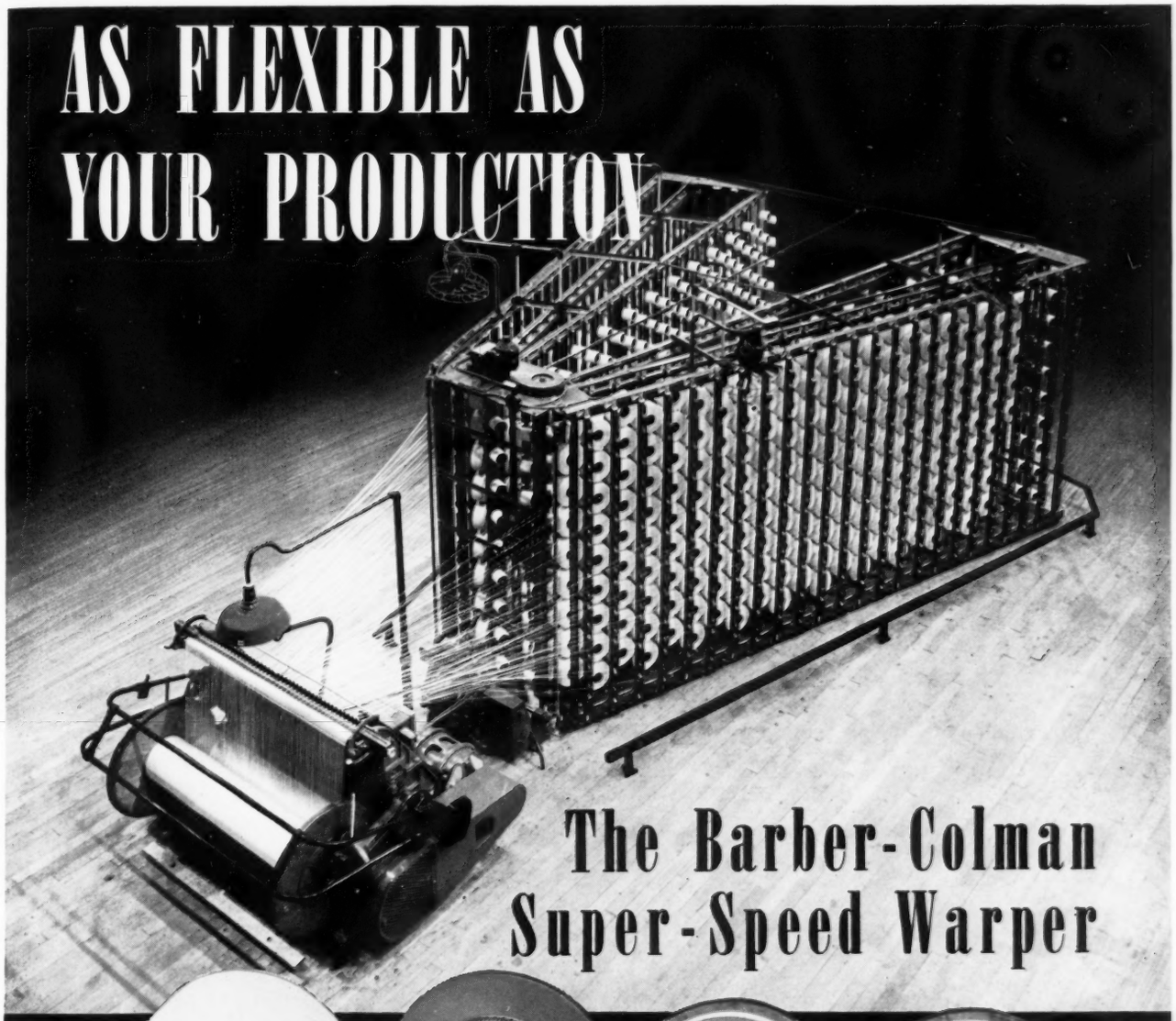
HENRY JOHNSON, a leading figure in the rayon industry in England and the United States, passed away at Coventry, England, recently. He was 72 years of age. Mr. Johnson was one of the founders of the company that later was to become The American Viscose Corporation.

EDMUND E. BLAKE 66, who for 40 years was a member of the executive and engineering staff of Saco-Lowell Shops, passed away June 22 in Portland, Me. Mr. Blake had been chief engineer for the company for the past 10 years and contributed much toward the development of long draft and controlled draft, and other machinery developments.

GEORGE F. BRIETZ, 71, superintendent of the Selma (N. C.) Cotton Mills for the past 23 years, passed away in July at his home after an illness of several months. Mr. Brietz entered the textile field at the Arista Mills, Winston-Salem, where he remained 10 years, being transferred to Ilchester, Md., where he was connected with the Thistle Mills for six years. He went to the Selma Cotton Mills in 1915.

FRANK F. DODGE, chairman of the board and treasurer of The Atwood Machine Company, Stonington, Conn., died suddenly on June 13 in his 53rd year. Mr. Dodge was associated with Atwood for many years, becoming president in 1926 and assuming in 1936 the positions he held at the time of his death. He was a graduate of Harvard University, Class of 1907.

AS FLEXIBLE AS YOUR PRODUCTION



The Barber-Colman Super-Speed Warper

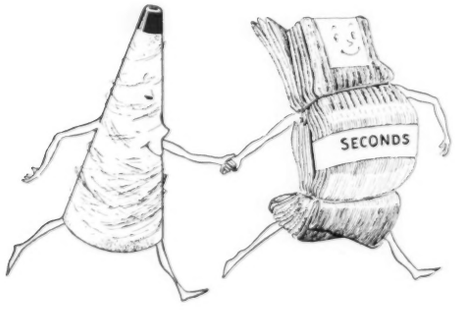
BALL WARP 700 Y.P.M. | DYE BEAM 450 Y.P.M. | PATTERN BEAM 900 Y. P. M. | SECTION BEAM 900 Y.P.M.

BARBER-COLMAN COMPANY

ROCKFORD, ILLINOIS, U. S. A.

FRAMINGHAM, MASS., U. S. A. ● GREENVILLE, S. C., U. S. A. ● MUNICH, GERMANY ● MANCHESTER, ENG.

The
WASTE TWINS



PRESS-OFFS AND *SECONDS* GO HAND IN HAND

One causes the other and the same thing that causes one causes the other—i.e., *slippage*—in the primary winding of a cone of yarn . . . . slippage that prevents the building of a perfect yarn package—without which there can be no perfect fabric.

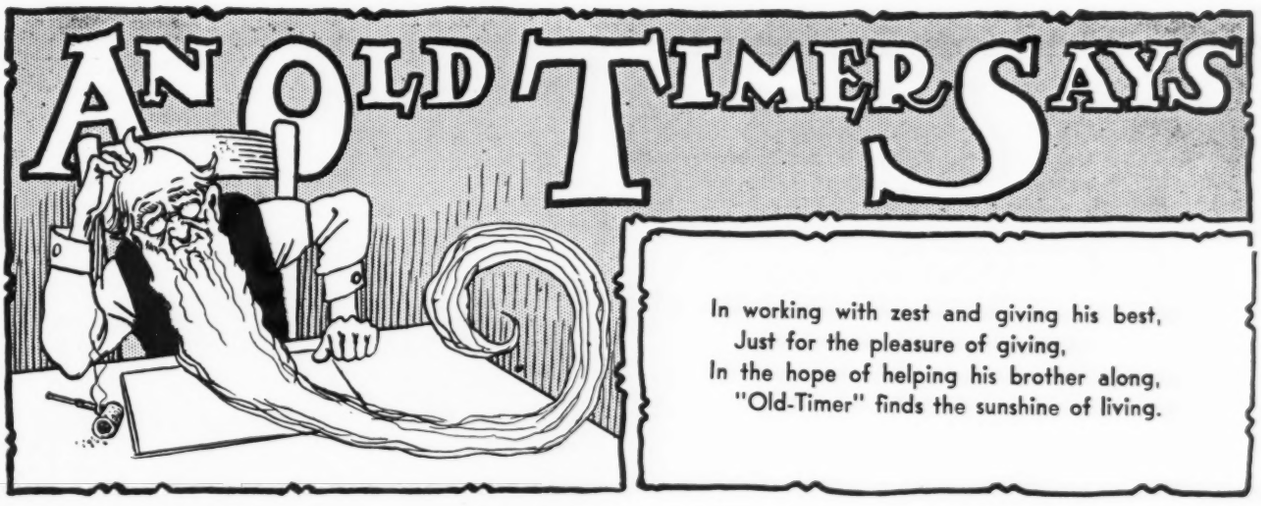
So easily avoided too—by simply specifying —"on SONOCO VELVET SURFACE CONES", on your next yarn contract.

SONOCO MAKES
EVERYTHING
IN TEXTILE
PAPER CARRIERS

SONOCO PRODUCTS COMPANY

BRANTFORD ONT. | HARTSVILLE S. C. | MYSTIC CONN.

DEPENDABLE SOURCE OF SUPPLY


AN OLD TIMER SAYS
In working with zest and giving his best,
Just for the pleasure of giving,
In the hope of helping his brother along,
"Old-Timer" finds the sunshine of living.

"What Is Your Boy Going to Do?" (Part 3)

(*Here* OLD-TIMER *and* JIM *conclude the discussion, started in the June issue and continued in the July issue, as to what is the best profession for a young man to choose under present conditions.* OLD-TIMER *has been arguing in behalf of the textile business, and* JIM *has prodded him for reasons why. As we left them last month, the old gentleman was just getting warmed up to his subject, and submits his final argument in the concluding installment herewith.*)

(Since this article is written in conversational style, it should be borne in mind that these paragraphs in regular type represent OLD-TIMER'S part of the conversation; and that those paragraphs in italics represent JIM'S part.)

The manager of a large colored goods mill recently showed me a batch of samples that he was taking to New York that afternoon which were all made of double cloth (two thicknesses). He explained that the process of rubberizing was so expensive that he was hoping to substitute these styles of goods where rubberized goods were being sold now. On leaving his office I could not help thinking to myself, "Why could not our young chemist find a way to make cotton fiber in liquid state, waterproof." We can waterproof cloth okey, why not fiber before it is woven? Then it could be applied to all uses for which rubber is now being utilized, waterproofing materials for the clothing and other trades. Looks as if this field would be almost unlimited. If the fiber could be made waterproof by the addition of some chemical while in its liquid state, that would open up the field of floor coverings, tile for the bath room, and thousands of other uses for products along these same general lines.

And talk about cotton cloth for roads! Oh boy! wouldn't our young chemist go to town if he worked out a process by which the liquid waterproofed cotton fiber could be applied to roads in the same manner that they now apply tar and other liquids to the roads. Now just watch this very thing come to pass when we learn to grow cotton for one or two cents per pound, and OLD-TIMER would not be at all surprised if many people who read these apparently foolish predictions will see the old time method of growing cotton changed in the very near future. As for our antiquated methods of baling and handling cotton, oh well, that is so simple that it will only take the efforts of some brainy business man or some association of textile men to get the idea started; then, when it is once started, thousands of smart men will begin to add their ideas to the original idea and away it will go.

If the cotton fiber can be put into solution and then converted back into a thread as fine as silk, it can also be converted into sheets like paper, which can be used for thousands of products for which woven cloth is now being used. This, you see, would cut out the cost of carding, spinning and weaving, and if the cost of growing could be cut down to the seemingly unreasonable figure we have mentioned, you will not have to be endowed with a Jules Verne mind to be able to see the unlimited possibilities for the adaptation of the South's most easily produced product to practically every conceivable thing we are now using any other product for.

No thinking man of today will argue against the statement that *all industry is rapidly becoming chemicalized.* This is going to result in a far wider range for the uses of raw materials, a multitude of new products and the substitution of many natural products by synthetics. Cheaper goods, more goods, new style goods, has been the trend in textiles in the wonderful progress which has been made in machinery and methods of manufacture in the last 25 years, all of which has resulted in more people employed, more dollars per operative, etc., etc., but only a casual reflection by the average mind can easily visualize the revolution which is just beyond the horizon for our young chemist when the best textile brains begin to give such possibilities some concentrated thought.

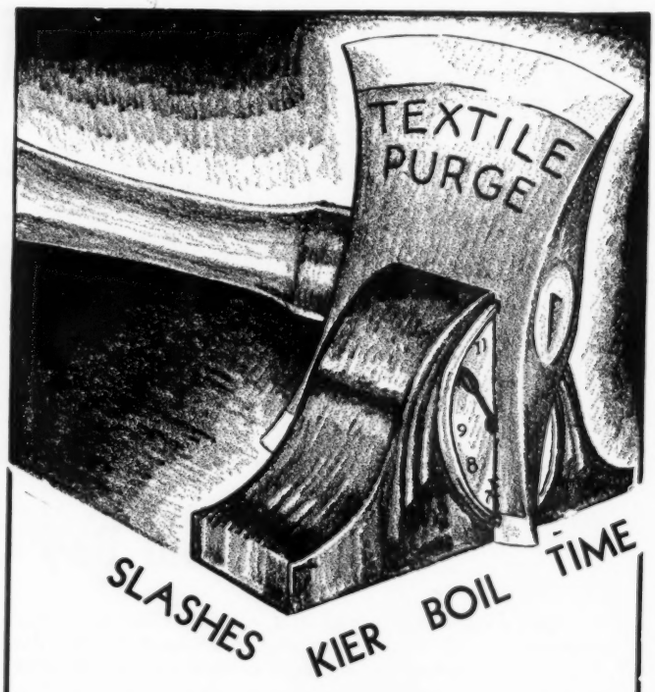
Well, anyway, JIM, I am confident that even you and I will live to see new uses for cotton, uses that will revolutionize the whole industry and once more bring the South into its own and restore to actuality the claim that "Cotton is King".

Yeah, OLD-TIMER, *but you started out to tell us*

BECAUSE our chief interest lies in the profitable turnover of merchandise, our Constructive Factoring service has helped manufacturers in many lines to a greater success.

MILL FACTORS CORPORATION

354 Fourth Avenue, New York City



A Better Boil-out In 50% Less Time

TEXTILE PURGE offers the following advantages as a boil out assistant:—

Low surface and interfacial tension, insuring *INSTANT* wetting out to the point of *SATURATION.*

Powerful Buffer effect on hydroxide solution, hence, controlled caustic strength, thus guaranteeing a better boil out at a *LOWER* but *SUSTAINED* pH Value.

Perfect solvent for native impurities and for such as are usually added in process of fabrication. The fabric is cleaner, better bottomed; the whites are whiter and more permanent; better absorbency and hence, truer colors and more level shades in dyeing.

In bleaching works perfectly with either Peroxides or with Chlorine.

May we demonstrate without cost or obligation to you?

DETERGENT PRODUCTS CORP.

RALEIGH, N. C. COLUMBIA, S. C. ATLANTA, GEORGIA TEXARKANA, ARK. BUFFALO, N. Y.

of other vocations for which an overseer or superintendent could prepare his son, and you are still raving about the textile industry, even if you did branch off a little into the chemical phase of textiles.

And I am not through, by a jug full of gin. I am just afraid to divulge more Jules Verne ideas, because with what has already been said, the fellows are going to have a pretty good laugh, anyway. However, I will tell you this: If I could not get my son, if I had one who was starting to college, to go into the textile business, or even into chemical engineering as it pertains to the textile industry, I would probably advise him to go into aviation, because aviation, as an industry, is still in its infancy. A young man entering into the employ of any industry that is still young, so to speak, has a greater opportunity to benefit by his initiative, providing of course that he has any. Most young men do have some initiative, and then, being in contact with a new industry where there are so many problems confronting it, problems with which they are still battling, this will naturally bring out any initiative the young man may have. As he sees his employers and his firm struggling to overcome certain things holding back their progress he cannot help but let his mind grope for ways to improve or change those problems. Only ten years ago there were just about 500 people on the payrolls of the air line companies, and even today, there are less than 12,000 men working directly for the aviation manufacturing firms. Of course you remember that it was during your lifetime and mine that the Wright Brothers made their first successful flight at Kitty Hawk, N. C.

Now suppose, JIM, that the textile industry had started during our lifetime; can't you imagine the opportunity that you and I would have had to improve manufacturing policies; to improve textile machinery—oh gosh, fellow, it is too fantastic to think about, and although I do not know anything about aviation, except from general observation, and the few trips I've made by plane, the longest of these being from the South to Chicago during the World's Fair, I can imagine the possibilities being practically unlimited for improvements of all kinds, both as to the ships and the management of the firms themselves in such a new industry. For example, when we left Chicago to return South, it was a very foggy day, one of those fogs that was so thick it looked almost as if you could cut it with a knife. Being interested in the operation of the big ship, I risked a question, directed to the co-pilot, and was agreeably surprised to find that he seemed willing and anxious to explain the instruments, etc., to me. As we could see only a few yards ahead of us, I asked him what was to prevent a head-on collision with some other plane. "Oh", he said, "we are flying on this radio route and the other planes are on another radio beam." "Sure," I said, "Mr. Co-Pilot, I understand that, but I have noticed a lot of private planes landing and taking off at every air port where we have stopped—Washington, Cleveland, etc.—and I expect there are some private owners of planes who do not know all there is to know about flying, just, for example, like some auto drivers. Suppose there was one of those fellows flying around up here (we were over a mile high) and he got in your way?" Mr. Co-Pilot said, "Now that would be just too bad." When I realized what he had said and how he said it, I had a kind of sinking feeling in my stomach and did not bother him with many more questions. I understand it now takes about 75 people on the ground for each pilot that is in the air. First thought right there is, that there is a possibility of those 75 ground men handling five or ten pilots instead of one, and again the thought comes up that a young man would probably have several times the opportunities as a member or as an employee with the ground crew than he would have as a pilot, although, very likely the first thought any of us have when aviation is mentioned is the pilot. However, I understand that there are many of those 75 ground men (to one pilot) who draw as much salary as does the pilot.

The radio systems for airplanes are special equipment, but far from being perfected, as explained previously, and I am informed that there is an actual shortage of radio men right now, believe it or not. I might imagine that there are all kinds of opportunities in the mechanical departments, maintenance departments and for dispatchers. The traffic department, I presume, includes sales and promotion, in which there are wonderful chances for new ideas. In fact, there is always room for the man with *imagination plus energy*, even in the old industries, and, with an industry as young as aviation, the possibilities are simply what you make them. Also, like most all American industries, every employee of the aviation industry has an equal chance of becoming an executive.

Well, OLD-TIMER, *you and I are too darned old to ever think of going into aviation, but we might hustle up an idea or two some of these days that some of these young fellows can use. Have you any more suggestions about vocations for young men?*

Yeah, JIM, but I don't want the fellows to have too much to kid me about, so guess we had better call it a day (or night, rather), but I do think there are unlimited possibilities in electrical engineering. With all of these beautiful lighting systems we see in buildings, public signs, highways, etc., I understand that the electric light is only about 5 per cent efficient. In cotton mill parlance, that electric light is only getting about 5 per cent production.

Look out there, OLD-TIMER, *that is a rather radical statement, and if you don't mind you'll have a bunch of these light manufacturers showing you up.*

Sure, JIM, I realize that, but first I said I *understand* the incandescent light is less than 5 per cent efficient, that is, for 100 pounds of coal at the coal pile and that coal generated into steam, then steam turbine operating generator and current from generator through switchboard and wiring to lamp socket, you receive less than 5 per cent of that coal converted into light. Then those light globe manufacturers realize that OLD-TIMER does not know anything about electrical engineering, therefore, if he makes a statement which is not according to engineering standards he has done no harm any way, but unless some of them do not explain that the statement made is badly out

(Continued on page 113.)

ALL STEEL
ECONOMY BALING PRESSES
ALL SIZES FOR ALL PURPOSES
LARGEST LINE BUILT IN U.S.A.
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CLINTON STARCHES
FOR ALL TEXTILE PURPOSES
Manufactured by
CLINTON COMPANY
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QUALITY SERVICE

DARY RING TRAVELERS
The Dary Ring Traveler is the result of 40 years' experience and an enormous amount of research and experiment in high speed traveler manufacture. Dary Ring Travelers are made from *specially drawn stock* by the finest of skilled craftsmen. They are *guaranteed in weight, temper and style.* Write for samples and prices today.
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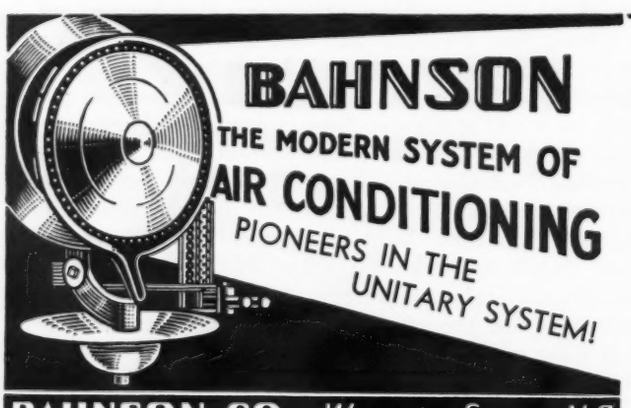
JOHN E. HUMPHRIES, Box 843, GREENVILLE, S. C.



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HOW OTHER MEN MANAGE

Variation in Yarn

Another answer to the question on sizing, variation in yarn, creeling, etc. . . . . .

EDITOR COTTON:

On page 117 of the December issue of COTTON, "CONTRIBUTOR No. 6740" has asked a number of questions on yarn manufacturing methods. He is using 15/16-inch to 1-inch Strict Low Middling or less cotton, making yarns from 7s to 45s.

To begin with, it is my opinion that 45s yarn is pretty close to the danger line when made from 1-inch stock. A much better yarn could be had from 1 1/16-inch cotton. Of course, it is more expensive, but probably the greater production by less stoppage, piecing-up, etc., would more than compensate for the premium paid for the longer stock.

1. (a) Variation in yarn. I should say that the percentage of variation allowable in different yarn numbers must change as the numbers run higher. For instance, on 10s, an allowance of 2½ per cent above or below the required numbers will not be too much (that is, 9.75s—10.25s), while on 40s I should make every effort to reduce this variation to less than 1½ per cent if possible (39.50s—40.50s). Of course, a great many factors enter into consideration for each individual mill. If the rolls were originally intended for medium or long staple cotton, then the proper settings cannot be used for short stock. If the rolls are self-weighted they are unsuitable for low numbers. In order to stay within the foregoing limits, all factors, including the quality of roving in the creel, would have to be most favorable.

(b) Frequency of sizing bobbins of yarn. I would advise a regular system of sizing daily. Plan to check on as many frames as possible each day. If it is a comparatively small room, I would take sizings from each frame daily, if possible. Have a dependable girl do the work and impress on her the importance of doing the work honestly and accurately.

2. (a) Frequency of sizing finisher drawing and allowable variation. It would be advisable to weigh the finished drawing sliver at least twice, preferably more, during an 8-hour shift. Take four yards from each delivery and weigh all four yards together. Then get the average weight of the entire frame by adding the weights from each delivery and dividing by the total number of deliveries per frame. This will give a pretty accurate weighing.

When any particular frame, drawing, roving, or spinning, shows undue variation in the numbers, a double check on the sizing should be made at once before any gears are changed. As a general rule, the least amount of gear changing we can get along with the better off we are.

When sizing the drawing, do not allow a greater variation than two grains above or below the standard weight. However, do not change draft gears on a frame that shows too great a variation from the standard until a second sizing has been taken to check against the first.

(b) Care should be exercised to see that the slivers are laid straight on the cutting board, and that the ends are cut the correct length. A difference of two or three grains can easily be made in the sliver weight by careless cutting. Also, take care to handle the sliver gently when breaking out the required length for weighing at the drawing frame. This is especially important on combed stock because the sliver is so smooth that very little tension is likely to stretch the sliver considerably.

3. Creeling the drawing cans. In creeling in on drawing frames, whether breaker, intermediate, or finisher, on the average it is good practice to have different amounts of stock in the cans. That is, some should be about full, others three-quarters full, etc. It is perfectly proper to put up all 6 cans from a breaker machine at the back of the finisher in the same delivery, providing, as stated previously, that all the cans are not creeled in at the same time. This would cause too many piecings in a short length of sliver.

4. (a) Off-weight picker laps. The best practice in handling picker laps that are off standard is to set them back and run them through the finisher again. It is advisable, when running these rejected laps over again in the finisher picker, to exercise caution that not more than one rejected lap is put through the picker at the same time. I would not advise having a special set of cards to handle rejected laps, as sooner or later it will cause confusion and tend to increase unevenness, rather than to eliminate it.

(b) and (c) Weight of card sliver practical to run. If the work is at all fussy, I should advise a sliver not exceeding 50 grains on the cards. Several grains lighter would be my choice for very particular carding. No mill has yet been able to combine high production and good carding. The card is one machine in the mill that absolutely refuses to compromise. Slow doffer speeds, a light lap and light sliver are all important essentials to good work. Of course, if you wish all the production you can possibly get, for a fair quality of sliver, then speed up the doffers, but keep down on the sliver weight as much as you can. Heavy card sliver will be neppy and dirty. Trouble will also be experienced with a heavy sliver at the breaker drawing. There will be

unevenness and cutting at the trumpet. This condition will show up at the finisher drawing, where excessive breaking back in the cans will be noticed. It will also show up again in the spinning room when the yarn is tested for breaking strength. If warp yarns are made from the stock in question, then the evil will be doubled. There will be plenty of trouble experienced on the spooling and warping. When the yarn finally reaches the weave room, the production will be lowered.

On a frame having 6 deliveries per head, it is wise to stay within the draft limits of 5 to 7. The closer we keep to a draft of 6, the better will be the result, on the average.

CONTRIBUTOR NO. 6789

Storage Bins

By storing roving the lint is prevented from settling on the package. Bobbins are also kept cleaner

EDITOR COTTON:

We have built bins on a spare floor in our spinning room for the storage of roving and bobbins. They are not expensive, but have shown us a profit by keeping the roving clean so that it can be run better in the spinning.

In the matter of construction, I have found it desirable to use pine, ¾-inch thick. All sections and corners require a 2x4-inch board for substantial support. In Fig. 1 may be seen a general plan for the construction of the roving bin, the door being 44x25½-inches, swung on two hinges at the bottom so as to enable the roving man to drop the door down out of his way while loading his boxes. It is closed by raising the door up and turning the cupboard button to a vertical position. The dotted lines indicate the division on the bin. The bin illustrated in Fig. 1 will hold from 600 to 750 pounds of roving, depending upon the size of the bobbin that is being used.

The bobbin bin is constructed a little differently, having a sliding door, thus enabling the door to be closed at all times in order to keep out the lint and other falling waste.

In Fig. 2 the angled dotted lines indicate the door slide, which when the bin is opened, slides under the top of the bin; this particular point of construction is illustrated by the letter *A*. The sliding door is equipped with a handle and a stop on each end to prevent fingers being mashed. When the bobbin boy is storing or taking out his clean bobbins from the box, he sticks a 20d nail from the top of the box through the door just as the door stops to hold the door open, this point being marked *B* in the illustration.

There is a nail driven on the outside of the roving bins above each door on which signs may be hung, Fig. 3. Two or three signs reading "Put Roving Here" and two or three reading "Take Roving Out" will be sufficient. These are hung over the doors to indicate to the roving hauler from the spinning department which of the bins to use in filling up his truck or box, and at the same time the section man in the card room knows where to put the roving and knows where the oldest roving is stored. Also, on the outside of each bin there are tags indicating the hank size of roving to go into each bin.

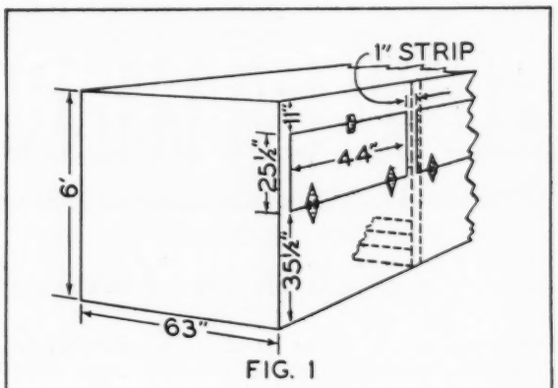

FIG. 1

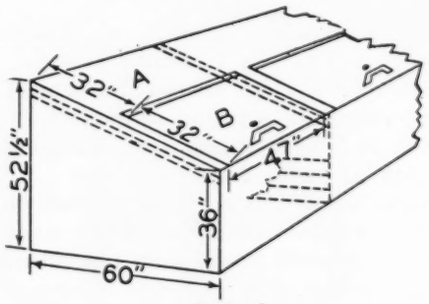

FIG. 2

FIG. 3

By using these bins, one can expect an improvement in the appearance of the room and roving almost free of lint. The bobbins will also be much cleaner.

CONTRIBUTOR NO. 6768.

Long Draft—Better Break

ON PAGE 129 OF THE MAY 1938 issue of COTTON a discussion appeared on the question "Will an excess speed on slubber or fly frame cause a weak break?" in which several viewpoints were given. One man considered that when running .50-hank roving with a front roll speed of 189 r.p.m., if the speed were increased to 226 r.p.m. the faster roll speed would give the strongest break in yarn made from the roving of such fly frame having this speed as compared with the fly frame with a roll speed of 189 r.p.m.

"WASH (R. I.)" agrees with this opinion and gives us a study of the structure of the cotton fiber:

Most all mill men know or should know that the cotton fiber is hollow and spiral. Also, most mill men know that the longer the fiber is under the action of any attenuation agent it will in turn effect a change in the physical condition of the fiber, mainly in the nature and amount of the twist in the individual fiber. This can best be proven when sampling

cotton, where in order to get the exact length of the staple in the sample, the fibers are pulled and rearranged many times before the sampler is satisfied that he has the exact length of the staple in the sample. But in pulling the sample in order to increase its length, he destroys the nature and amount of twist in the individual fibers.

I hope the reader can see the point in the foregoing analogy because it is the best argument that I know in favor of long draft fly frames. The same reasoning can be applied in favor of long drafting because the number of processes are reduced, which helps to hold the twist in the individual fibers. In other words, in order to remove the twist in the individual fibers, the fibers must be pulled many times, and, of course, that is what happens when the stock is run through a greater number of processes. Herein lies the secret of why long drafting makes the strongest yarn.

In the same article another man claims that high speeds will cause a weaker break because the increased speed will increase the pressure of the paddle, causing an excess drag of the stock at the paddle and stretching the roving. This reasoning is correct to some extent because in the bobbin-lead system the bobbin leads at all times during the winding, and, of course, the greater the pressure of the paddle and the greater the drag. But it must not be forgotten that the greater the pressure, the larger the number of layers that can be added to the bobbin, which creates a slack tension and offsets the foregoing evil.

Comb Box Lubrication

EDITOR COTTON:

"CONTRIBUTOR NO. 6826" asks several questions regarding comb boxes and their operation on page 128 of the May issue and if the data are secured it will in every case surprise the operating mill man or overseer of carding as well as the superintendent. Tests conducted for any motive will reveal facts that have only been slightly considered, and when broken down will be tentative toward elimination of certain existing evils that should and can be avoided.

1. *What is the speed of the pulley on the comb box? The average speed, and the maximum and minimum in the room?*

Comb box speeds vary for the type of goods being run, the nature of the cotton, the production put through the card, and matters of opinion often time change the speeds to please the ideas that some men have. Ten per cent of variation from standard, or rather 20 per cent from fastest to slowest will cover the variation that is found in the general card room. Heavy carding will require faster speed; some mills step the speed up to 2100 r.p.m. and some reduce them to 1000 r.p.m. on the lighter production; I have been convinced that often the speeds that some comb boxes are run are not at all necessary. In one mill the comb boxes were set up at 1800 r.p.m. and later this reduced to 1050. Good clearing was being given from the doffer, and the comb box temperature dropped by better than 15 degrees, and the oil consumption decreased by 20 per cent. However, the combs had to be set at a lower angle in order to please the management with the appearance of the web.

2. *What is the difference between the temperature of the comb box and the room temperature? The average difference, and the maximum and minimum difference? Is the temperature difference an indication of the power required to drive the comb? That is, does a higher temperature indicate more power is being consumed?*

Temperature on certain oils will be only 20 to 25 degrees hotter than room temperature. With others, and comb box mechanical condition, it will increase the temperature as much as 70 to 80 degrees and in some extreme cases the oil will become so hot that it boils and its body is thinned almost as much as water.

These hotter boxes in many cases are due to the mechanical condition of blocks, fingers, forks or eccentrics that need to be gone over and replaced; then naturally those boxes on which the shafts are difficult to rotate will require more power than those boxes that are in good condition and run easily and smoothly.

3. *How often do you oil your comb boxes? How did you determine this oiling period? How much oil do you add at each oiling?* In some instances I have oiled comb boxes only once weekly, and at present am oiling twice weekly on a 120-hour work week, which is sufficient. The grade and the weight of the oil, as well as the speed run, will be factors controlling this to a large extent. We determine this schedule by observing the height of the oil in the oil level indicator, which is a fairly good gauge to be governed by. However, in the past I have found that when the temperature begins to increase we will find that the level is dropping below the point where it should be. When the level begins to drop to ⅛-inch or more below the base of the larger part of the gauge, the comb box should be re-filled or enough oil added to bring the level above the smaller part of the oil level indicator. Usually 1½ to 2 ounces are added at each oiling, or an average of 3 ounces per 100 card hours. With lower speeds this amount is reduced some but not proportionally.

4. *What is your oil consumption expressed in ounces of oil per 100 card-hours?* At 1800 r.p.m. round figures we add three ounces per 100 card hours of 70 viscosity oil.

5. *What type of oil gives best results: light oil, heavy oil, compounded oil, or straight run oils?*

This question is food for a long wrangle that will bear plenty of experimenting. I have used light oils down to 25 viscosity, and heavy oils up to 140 viscosity, and in one case a light grease similar to pressure gun grease. Of these the oil that ran the longest without adding any oil, and then required the least amount to be added was one compounded with a base of 20 per cent petrolatum. We ran this experiment on 48 cards for six months. The first oil having to be added was after 25 running days of 16½ hours each; after this the weekly addition was scarcely two ounces weekly of 80 running hours. The temperature of this oil was averaged at about 20 degrees above the aver-

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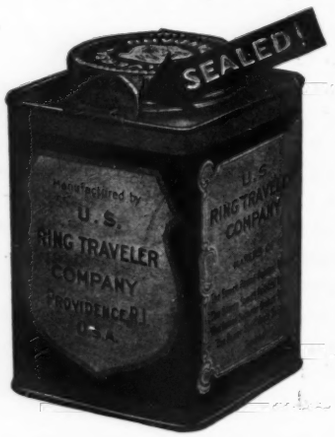

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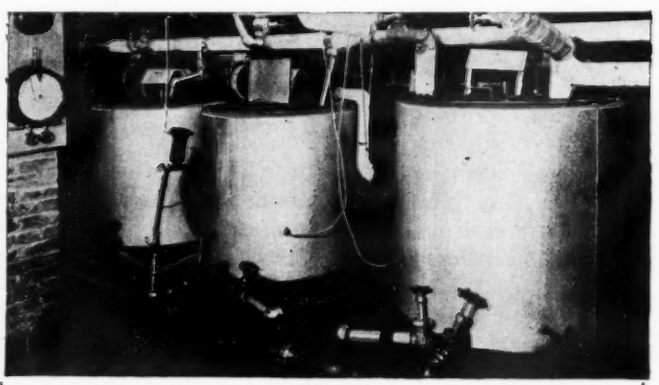

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age room temperature.

The light pressure grease required a new set of comb box bands to be put on each Monday morning, and the temperature ran high due to the necessity of the heat necessary to start the grease to flowing.

Some men claim that when comb boxes are new if they are started with 20 viscosity oil, they will never require any heavier oil or become gummed up or caked with accumulated matter that plugs up grooves and oil ways. I cannot substantiate this theory as I have not compared such results.

Another oil test conducted was with a compounded oil that I have used. Not knowing the consistency of the oil until after the test was over, for a period of about a year we watched the condition of the boxes closely and found that an accumulation was forming on the sides and bases of the inside of the boxes. It was a gummy, jelly-like substance, and when we had the analysis made the surprise was that the base included 4.2 per cent of body of soap, or rancid animal fat broken down with an alkali. The average temperature of this test was around 130 degrees.

Heavy oils of 60, 70 or heavier viscosity are most generally used, though from a bit of reasoning it seems as though the lighter oils in comb boxes when new would be as consistent because we are taught that we should start a new automobile with lighter oil and increase the viscosity as the pistons and cylinders wear.

6. *Did you ever examine the inside of a comb box for sludge, gum, stopped-up oil holes and bearings, etc? If so what did you find?* Yes. Almost every comb box, after having been run for a year or longer will have some collection of matter in them, that collects, I feel confident, partly from the dust that falls and settles into the opening for the oil level indicator, working around into the oil grooves and along the walls and bases of the comb boxes. However, as mentioned in the answer to question No. 5, there are often substances in the bases of certain oils that tend to become fatty, and coagulating and congealing, and sets up this matter in the comb boxes.

7. *Where does the oil go which the comb box consumes? Does the quantity of oil in the box affect the temperature? That is, does a box over full run warmer than one under full?* Where the oil goes if the box leaks is on the floor, or other parts of the card when thrown there by the comb box pulley. If the boxes don't leak, or are not left open at the top to throw out the oil by the eccentric motion, it is hard to say exactly where it goes. Though if you are an exceptional observer you will often see a small ring of oil around the edge of the comb box caps even if the cap screws on, and this would be one outlet for the oil that is replaced in the boxes at frequent intervals.

I cannot say definitely whether the degree of fullness of the comb boxes causes the temperature to run higher, but I do know that when the oil level goes below a certain point the temperature will rise, and the boxes begin to rattle.

8. *Do you have any other ideas in general on comb box lubrication?* Yes. I think that at least once each year each comb box should be completely dismantled and every part examined for wear, and those parts found worn beyond possible proper fitting should be replaced. New felt gaskets should be put in to seal the joints, and to hold the oil that is put into the boxes. Also, adjust the eccentrics, blocks and plugs to take up any end play that exists, thus stopping this oil waste.

To be clear about it is this: whether the mill management realizes it, or will admit it or not, it pays for the general overhauling of the comb boxes even if it is not done every six months by the extra oil that is used, along with the extra wear these boxes receive due to back lash, loose fittings, and plugged oil grooves and reservoirs.

Often, when a test is run, the test is not made sufficiently long enough. A thorough test on comb boxes should be for at least six months, with a minimum of 20 cards for a test, 40 to 50 is better, instead of the one, two or four cards.

When such things as comb boxes are considered, and their importance, it is better to be safe than sorry. But I find that too few consider them seriously enough, and in 11 years of observation I have found only one mill that I considered paid close enough attention to its boxes. This program included once each year of putting on an extra man that knew his business, to overhaul all the comb boxes completely and thoroughly, and you never saw a puddle of oil under the boxes, and seldom you saw a sliver can sprayed with oil, and these were caused by the grinders overfilling the boxes when the time to fill them came around.

CONTRIBUTOR NO. 6838

(Other discussions on the subject of comb box lubrication appeared on page 97 of the June issue and page 87 of the July issue. Look up the original question on page 128 of the May issue and give us your opinion on this subject; the discussion is open to all.)

Plumbing New Spindles

EDITOR COTTON:

I will try to answer "CONTRIBUTOR NO. 6735" who asks on page 121 of the December 1937 issue of COTTON whether when installing new spinning it is better to plumb the spindles, both top and bottom, immediately upon starting up the frame, or, to run the ring rail almost to the top, set the rings, and let the frame run for 30 to 60 days before plumbing the spindles.

When erecting a new frame all the moving parts should be checked, and the frame lined and leveled. Then let the frame run about one day so that the spindles can set themselves on top of the bolster and base. New spindles are harder to plumb than spindles that have already been plumbed.

On page 149 of the February issue "CONTRIBUTOR NO. 6764" says "We ran the rail to the bottom, put the block in, and set the rings. We then knocked the spindles in at the bottom. Next we ran the rail almost to the top and knocked the spindles in at the top." I do not see where this man did so much good in having his spindles plumbed. We all know that when a spindle is knocked in at the bottom it is knocked out at the top, and if it is knocked in at the

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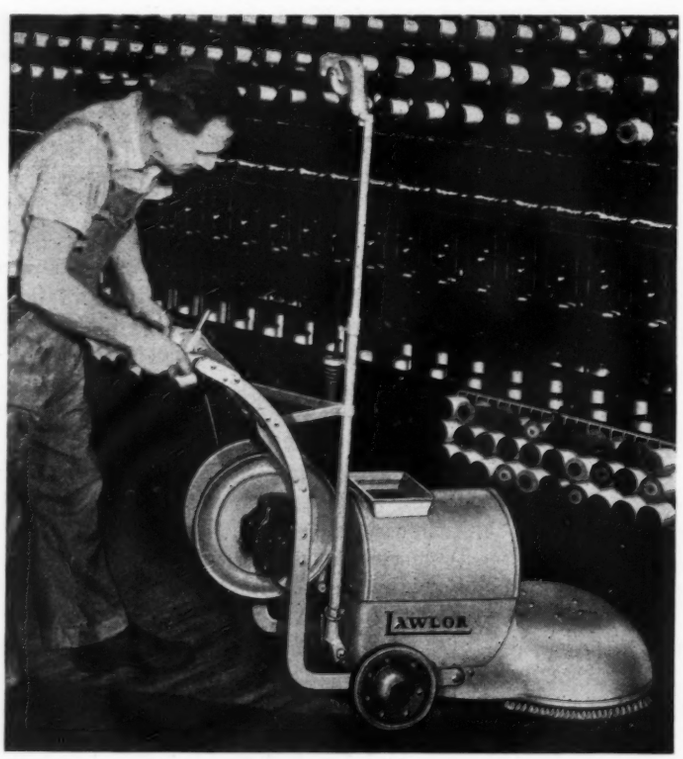

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top it will be knocked out at the bottom.

There is only one way to plumb a spindle, center of ring bottom and top. That is, knock the spindle in at the bottom, run the rail to the top, have the paper cut into small pieces, place 1, 2, 3, or 4 pieces on the close side of the plug under the base. After going over the frame in this manner, run the rail to the bottom, check out spindles missed and place paper on the open side of plug under the base. In this way the spindles can be plumbed accurately.

CONTRIBUTOR No. 6806

Preventing Filling Bars

EDITOR COTTON:

On page 97 of the March issue of COTTON, "CONTRIBUTOR No. 6774" asks for a method of eliminating filling bars in fabrics that are inspected by the "through light" method. His numbers are 32s to 50s made from 1 1/16-inch to 1 3/16-inch cotton, spun on regular draft frames and conditioned with a chemical.

Our experience has been that we have more of these filling bars in flannels than we do in print cloth. One thing to check is the spindle whorls to see that they are all the same size. Where the whorls are off in size there will be a variation in twist, which will cause filling bars. Also, a slack band will give less twist and should be replaced at once.

Another important thing to watch is the starting of new cotton each fall. If the new cotton is green and carries considerably more moisture or less moisture than is normal for the old stock, it will not feed into the opening and picking processes as evenly as the old stock, and as a result the yarn will not be as even. When starting new cotton, try to run it in solid and get the old stock completely out without mixing it in the spinning creels with the new stock.

A bobbin of yarn from the new stock will look heavier or lighter in the cloth than a bobbin from the old stock even though the two may weigh the same. Some of the newer gins now have a dryer in which the cotton is conditioned before ginning. Often, cotton from these gins do not have the normal amount of moisture in them and will feed unevenly. In such cases the stock will be puffy and this puffiness may last through the spinning process. Puffy yarn will look like a heavy bobbin of filling in the cloth even though it may weigh the same as a bobbin that is not puffy or dry.

CONTRIBUTOR No. 6782

EDITOR COTTON:

"CONTRIBUTOR No. 6774" is having difficulty with filling bars in his fabric when inspected by the "through light" method, according to his question on page 97 of the March issue. I do not know whether he is having this trouble on colored or gray fabrics so I will give him my experience on both.

On colored fabric, each batch of dyed cotton will have to be tailed out of the carding and spinning and weaving because if different batches of dyed cotton are mixed there will be filling bars.

On gray fabrics, I have had to tail out each mix of so many bales of cotton put down because the cotton was off in color.

To prevent filling bars, check for variation in roving and yarn, slack bands or tapes, chokes on spindles, bad or worn out bobbins, mixed travelers and anything that will cause a variation in the filling twist. When the taper on the filling is not the same on all of the spinning frames, there is more tension on some bobbins of filling when the yarn is run in the shuttle than on others.

It will help to use all of the filling out of the filling boxes before other filling is placed in them. Also, it may be necessary to let the filling stand longer after conditioning it.

CONTRIBUTOR No. 6801

Travelers Unthreading

The final chapter on discussion* appearing in 1937

ON PAGE 117 OF THE MAY 1937 issue of COTTON there appeared a question by "CONTRIBUTOR No. 6643" who requested information on preventing travelers unthreading after doffing. This man was running 21½s warp, spindle speed of 9000 r.p.m., on a 1⅞-inch ring, using a No. 1 round-point traveler, 2-flange and 2-circle. The filling number was 24s, spindle speed 7100 r.p.m., 1½-inch ring, using a 5/0 round-point traveler, 1-flange, 1-circle. Subsequently answers were received from several mill men suggesting methods of correcting this trouble, all of whom, among other factors, pointed out that "CONTRIBUTOR No. 6643" should use a square-point traveler to remedy his trouble.

Later "CONTRIBUTOR No. 6643" explained that he had desired to use the square-point traveler at the time of the inquiry, but for reasons beyond his control was unable to do so. He was also told that the square-point traveler would wear the rings quicker than the round-point travelers. However, "CONTRIBUTOR No. 6643" was finally permitted to run a test on square-point travelers and was so satisfied with the results of the test that he has been running them continuously.

A report of the test and change-over in travelers is given as follows: The change on 24s filling was from a 6/0 round-point traveler to a 3/0 square-point. The change on 21½s warp was from a No. 1 round-point to a No. 1½ square-point. The 3/0 traveler is flange one circle one on a 1½-inch ring, and the 1½ traveler flange 2 circle 2 is on a 1⅞-inch ring. This has changed the ends down per doff from about 40 on the round-point to about 10 or 12 on the square-point. Also, from an indefinite number of ends down per 1000 spindles on the round-point traveler to 21 ends down per 1000 spindles on the square-point.

*The cross-index shows that the original question appeared on page 117 of the May 1937 issue of COTTON. Answers from five mill men were published on page 131 of the June 1937 issue and page 104 of the August 1937 issue of COTTON. If you do not have your cross-index of all articles appearing in COTTON for 1937, the editors will be glad to send you one without charge upon request.

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The advantages of these methods over bucket type drainage were at once apparent. With this new method there was no waiting for rolls to heat; higher temperatures could be carried; production rates were increased as much as 25%. The value of the idea has been attested by the installation of thousands of Johnson Joints and by the adoption of the Johnson Joint and Johnson methods by most manufacturers of textile machinery as standard or original equipment on their machines.

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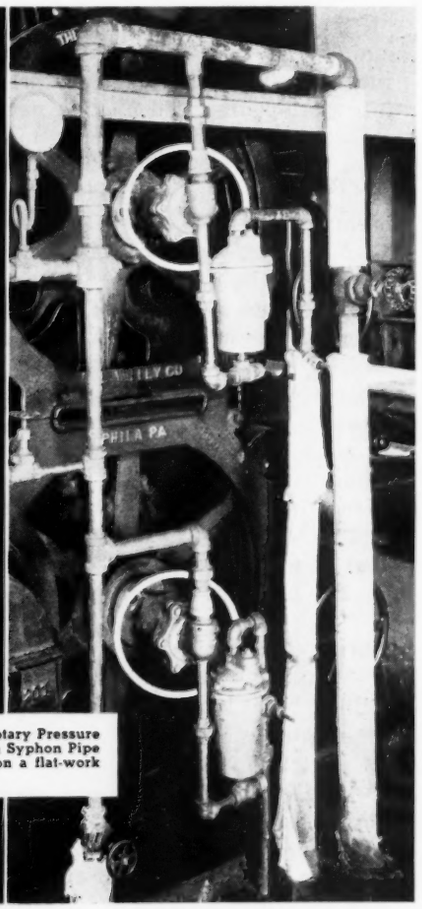

Johnson Rotary Pressure Joints with Syphon Pipe Drainage on a flat-work ironer.

Record of Fixers' Supplies

Some interesting facts are discussed when a record of supplies used by each loom fixer is kept . .

EDITOR COTTON:

We have a system of keeping records on certain loom supplies that we have found beneficial to us and we would like to pass it along to other readers of this department. There are some supplies that are used on looms more than others and these are the ones upon which the records are kept; for instance, shuttles, pickers, lug straps, check straps, and picker sticks. This record of the supplies used is kept on a card, about 5x7 inches, there being one card for each loom in our mill.

Now for a bit of explanation as to how we work this system. Say a fixer is going to replace a broken shuttle in one of his looms. He must either go to the overseer or one of the second hands for a requisition to the supply room, the requisition bearing the number of the loom. When this is done, a note is made on a pad in the overseers' office kept especially for that purpose to the effect that a shuttle has been issued for a certain loom number. The overseer also posts the entry on a card in his office so he will have a permanent record.

With the note made on the overseer's pad as a reminder, the second hand or overseer gives the loom fixer enough time to replace the shuttle and then goes to that loom and inspects it. If the loom is in good condition and the shuttle is running properly, the pad in the overseer's office is checked; this lets the overseer know that the loom has been inspected and is running satisfactorily. Of course, if the inspector discovers that the loom is not set up correctly, he calls the loom fixer to the loom and has him do the job right before he checks it off on the overseer's pad.

It will be realized that in a mill having over 1400 looms that there will be days when a number of new shuttles will be issued, and therefore the overseer will have more to do on some days than on others, but regardless of the amount of work he must do, the overseer also checks the looms behind his second hands. Some days he has time to check all the looms with new shuttles and some days he does not, but he always catches up, and the fixers and second hands know that he is going to check at least a few of the looms each day so they are fixed and checked as well as possible.

By keeping such a record on shuttles alone, we have been able to cut our shuttle cost, get our looms fixed better, and reduce seconds. The record also helps the overseer to know which are his best fixers. This record was kept by me for one year before it was turned over to the overseer and we discovered a number of interesting things about how the shuttles were being used.

We have 13 sections and most of them averaged using practically the same number of shuttles but we had one section that used as few as 76 shuttles on 108 looms while two others used as many as 142 shuttles on the same number of looms. Also, we had some looms that did not have a shuttle put in them for the whole year and yet some looms used as many as four to six shuttles for the year.

When this record was shown to the overseer he could hardly believe his own eyes; he did not realize he had looms in such bad condition, but he immediately went to work and checked all looms that were using too many shuttles and he is keeping the record himself now, and I am sure he will not have any more looms to use six shuttles or even four shuttles in a year's time.

A little explanation of the system used by the overseer will be helpful in understanding this method of keeping a permanent record, which was mentioned in the first and second paragraphs. For each loom in the mill there is a 5x7-inch card, carrying the loom number and horizontal headings such as, shuttles, lug straps, picker sticks, crank shaft, etc. Then when the overseer has issued a requisition for a shuttle to a fixer for Loom No. 1321, he turns to the card bearing the number of Loom 1321 and under shuttle he puts the date. In this manner he can tell exactly how long a shuttle runs in a loom.

We began keeping the record for shuttles first and this showed us such a saving that we decided to keep a record by sections on the other supplies. I wanted to see just what we could learn. Of course, we did not try to keep a record on individual looms for such parts as pickers, bolts, etc., because we knew this would be a little too much work and would be rather hard to keep inasmuch as often we issue pickers to the fixers by the dozen, and he could not be expected to keep a record of each picker replaced. What we do is have the man issuing the requisition to place the section number of the loom fixer in a corner of the order, and once a week the supply room clerk turns all requisitions from the weave room back to the overseer, who checks each section to see how many pickers, picker sticks, check straps, lug straps, etc., that each fixer has used on his section.

By this method, at the end of six months or a year the overseer will have some figures to show whether one section is using more pickers, straps, etc., than another.

The year I kept the record I found several interesting facts. On check straps, one section had used as few as 76 in a year on 108 looms while another section had used 138 on the same number of looms. For pickers one section used only 134 in a year and another used 230. This meant either that one fixer was allowing the pickers to run too long or the other fixer was not getting the proper life from his supplies. We had meetings with our fixers to show them our figures so that they could see if another fixer was beating them on the job; at the same time it permitted an open forum for the discussion of problems. The fixers also realize that we are keeping a check on them and that we know just what they are doing.

I believe that if any mill begins a system of checking on the supplies it will be able to reduce the cost, increase production, and lower the number of seconds being made.

I have faith in systems. Try it some time.

CONTRIBUTOR NO. 6742

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266. Energy Drive—The Latest Improvement in the Art of Weaving—7-page illustrated booklet describing the sensational new energy drive for looms. Complete with specifications and actual installation results. Power Transmission Council, Inc., Boston, Massachusetts.

269. Stainless Steel Equipment for the Dyeing and Textile Industry—Attractive four-page folder describing the Blickman line of dyeing equipment. S. Blickman, Inc., Weehawken, N. J.

271. The New American Adjustable Diameter Wedgebelt Pulleys—illustrated leaflet describing the American adjustable diameter sheaves designed to produce the best performance in all types of V-belt driven textile machinery. American Pulley Co., Philadelphia, Pa.

272. Where to Buy Monel Metal Textile Equipment—Attractive booklet which lists the names and addresses of experienced fabricators of Monel Metal equipment for the textile mill. The International Nickel Company, Inc., 67 Wall St., New York, N. Y.

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281. Sealed—Showing how dirt and dust shorten life and destroy accuracy of bearings and importance of sealed bearings to keep dirt out and to keep lubricants in. New Departure Division, General Motors Corp., Bristol, Conn.

283. Postal Guide and Envelope Catalog—Answers every question regarding mailing, postal and shipping rates. Atlanta Envelope Company, Atlanta, Ga.

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286. Tricon W-30—Study of wetting agents and their activity with recommendations for textile processing. Rohm & Haas Co., Philadelphia, Pa.

287. New American Pulley Motor Base Catalog—an attractive new illustrated catalog describing in detail construction and application of new tension control motor base. Includes data comparing performance of drives with and without tension control motor base and applications are shown for both flat and v-belt drives. American Pulley Co., Philadelphia, Pa.

288. Nopco Softeners and Wax Finishes—14 page booklet describing the various Nopco Products for finishers of cotton goods. National Oil Products Co.., Harrison, N. J.

289. Caustic Soda Bulletin—a data and reference book designed for the user of caustic soda. Complete with charts, drafts and formulas. Pennsylvania Salt Mfg. Co., Philadelphia, Pa.

290. Hyatt Roller Bearings on Textile Machinery of All Kinds—34 page booklet which describes and illustrates how Hyatt bearings are being applied to textile Machinery. Hyatt Bearings Division, Newark New Jersey.

291. Wolf Products for the Textile Trade—Illustrated booklet describing the Wolf line of chemicals for the printing, dyeing, sizing and finishing of all textile fabrics. Jacques Wolf & Co., Passaic, N. J.

292. A New Mildew-Proof Mill White—Illustrated folder describing the newest development in mill paint. Textile mills, operating under conditions of high heat and high humidity, can do away with the problem of mildew by using this new mildew-proof mill white. The Billings-Chapin Company, Cleveland, Ohio.

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30. Lubrication of Textile Machinery—32 pages illustrated. Data covering the economical lubrication of all textile machines. New York & New Jersey Lubricant Co., 292 Madison Ave., New York, N. Y

38. Sleaziness in Full Fashioned Knitting—Illustrated survey with samples of fabric showing causes of sleaziness and methods to be employed in eliminating it.—By Textile Machine Works, Reading, Pa. (This company also issues parts catalog for Reading full fashioned machines with general information on subject of full-fashioned knitting.)

55. Interpretation of Analysis for the Layman—An eight page booklet explaining what the various items used in fatty oil and sulfonated oil analysis

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Continued from Page 96

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64. SKF in the Cotton Mills—A twelve-page booklet showing the advantages in power consumption, increased production, savings in lubrication, increased yarn breakage strength to be secured through roller bearing spindles. SKF Industries, Inc., Front St. and Erie Ave., Philadelphia, Pa.

65. Bulletin No. 500. Cooper-Hewitt Industrial Illumination—booklet explaining in detail the importance of good lighting and the necessity of proper quality as well as proper quantity of light. General Electric Vapor Lamp Co., Hoboken, N. J.

70. Fafnir Ball Bearings for One Process Pickers—outlining the advantages of ball bearings in guaranteeing smooth, accurate motion, particularly on evener, as well as uninterrupted production, ease of operation and cleanliness of bearing units throughout the one-process pickers. Fafnir Bearing Company, New Britain, Conn.

72. The Merrow Butted Seam—A 16-page booklet defining and illustrating the Butted seam, describing its properties and outlining some of the advantages to be gained by its use in Textile fabrics. The Merrow Machine Co., Hartford, Conn.

77. Bulletin S 200—Illustrating and describing the new Reeves Variable Speed Drive for spinning and twister frames, explaining its many distinct advantages and giving charted results of exacting tests. Reeves Pulley Company, Columbus, Indiana.

88. Dayton Cog Belt Catalog—A 32 page booklet full of vital information on power drives, plainly and simply assembled and arranged so that anyone can select the proper standard drive for any condition. It also provides data for the calculation of drives where acquired. The Dayton Rubber Mfg. Co., Dept. C-11, Dayton, Ohio.

106. Cotton System Warp Sizing on Multiple Cylinder Machines—a folder showing the advantages of this type of machine in making warps of acetate and other synthetic yarns and spun silk. Charles B. Johnson, Paterson, N. J.

107. Complete Information on Alemite Lubrication—Showing how costs can be reduced through proper lubrication. Alemite Corp., 1828 Diversey Blvd., Chicago, Ill.

109. Some Properties of Starch and Dextrine—Explaining certain fundamental properties of starch and its derivatives and their action when heated and agitated. Stein, Hall & Co., 285 Madison Ave., New York City, N. Y.

110. 3-In-One Oil for Industrial Uses—showing the many industrial uses and advantages of this oil. A. S. Boyle Co., 1934 Dana St., Cincinnati, Ohio.

116. Arcy—Telling in an interesting way the story of Arcy, which completely liquefies ordinary thick boiling pearl starch, and its many advantages. Drake Corporation, Norfolk, Va.

117. Anti-Friction Bearings as Applied to Spinning, Drawing and Twisting Frames—This bulletin shows with detailed drawings how a simplified design of roller bearing applications is made to replace the plain babbitt bearings and lists the advantages that are gained. It deals primarily with better continuous production and in consequence freedom from equipment care and repairs. Hyatt Roller Bearing Co., P. O. Box 478, Newark, N. J.

120. Goodyear Mechanical Rubber Goods Catalog—40 page catalog giving practical information and tables helpful in the selection of the proper belting, hose or packing to suit the requirements of the mill. Goodyear Tire & Rubber Co., Akron, Ohio.

122. Water Filters and Filtration Equipment—Containing complete description of the chemical processes involved in the coagulation and precipitation of foreign matter, the removal of iron, oil, manganese, from water and the production of clean water suitable for the textile industry, together with tables of specifications for standard filters, and information showing the extra profits to be made by the mill through reduction in costs and process difficulties, through removal of undesirable impurities in water. Permutit Company, 330 W. 42nd St., New York, New York.

128. Houghton's Hand Book for the Hosiery Dyer—This book contains the result of 69 years of experience in research and development of processing materials for the textile industries, together with a wealth of other data useful to every hosiery dyer. E. F. Houghton & Co., 240 W. Somerset St., Philadelphia, Pa.

130. Three New Textile Scouring Agents—This 32-page book gives many valuable formulas for the use of Houghton's Wonder Powder—a new type of colloidal detergent—in fulling, scouring and finishing nearly all types of woven and knit goods. Also contains several pages of valuable reference and conversion tables. E. F. Houghton & Co., 240 W. Somerset St., Philadelphia, Pa.

134. STA-PUT Lubricants—A brief description of an entirely new line of tough film lubricants which not only gives greater protection to bearings but eliminates oil drip and reduces lubrication costs. STA-PUT Lubricants are made in grades to suit all types of textile machinery. E. F. Houghton & Co., 240 W. Somerset St., Philadelphia, Pa.

139. Textile Detergents—Theory of the use of alkalis and control of pH—This 32 page booklet explains in simplified manner for the benefit of the layman the chemical processes that take place in using textile detergent in the finishing of textile goods. It contains many useful tables and data. Detergent Products Corp., Peachtree Bldg., Atlanta, Ga.

141. V-Belt Engineering Data Book—Over 50 pages of pertinent engineering information including data on selecting a V-belt drive design of special V-belt drives, numerous standard tables, charts and belt and sheaves list prices. Manhattan Rubber Manufacturing Div. of Raybestos-Manhattan, Inc., Passaic, N. J.

152. Plant Checkup List—Crane Co., 836 South Michigan Ave., Chicago, Ill.

154. Johnson Bronze Bulletin No. 340—showing over 600 sizes Johnson general purpose bronze bushings. Johnson Bronze Co., New Castle, Pa.

155. Link-Belt Catalog 1374 on the P. I. V. Gear—giving details of this positive variable speed control. Link-Belt Co., 307 N. Michigan Ave., Chicago, Illinois.

156. Link-Belt Engineering Data Book No. 125—showing features and giving engineering data on Link-Belt silent chain drive. Link-Belt Co., 307 N. Michigan Ave., Chicago, Ill.

163. Roto-Koner—Bulletin describing the new No. 44 Universal Winder, known as the Roto-Koner for winding knitting yarns, which has many new and distinctive features. Universal Winding Company, P. O. Box 1605, Providence, R. I.

164. Johnson Rotary Pressure Joints—Bulletin describing the rotary pressure joint which requires no packing, no lubrication and no adjustment, giving installation and maintenance instructions, types, sizes, dimensions and prices. The Johnson Corp., Three Rivers, Mich.

166. Precision Winding—An interesting 30 page booklet on rayon yarns and winding, designed for weaving and finishing mills using silk and rayon. Universal Winding Co., P. O. Box 1605, Providence, Rhode Island.

168. The Tube-Tex for Tubular Knit Goods—Bulletin describing this modern machine which extracts, processes, dries, conditions and folds in one continuous operation, lowering costs, saving labor, power, space and waste. H. W. Butterworth & Sons Co., York and Cedar Sts., Philadelphia, Pa.

170. Gates Textile Accessories—showing the increased efficiency and economy to be secured through the use of Gates cone belts, evener belts, card bands and loom binder cushions. The Gates Rubber Company, Denver, Colo.

171. Design of V-Belt Drives—48 page booklet full of valuable tables and data showing the type, number and design of V-belts that will give the greatest efficiency on each particular drive. The Gates Rubber Company, Denver, Colorado.

176. Sonoco Products—A 60 page illustrated booklet giving descriptions, specifications and charts of the many Sonoco products, including bobbins, cones, tubes, cork cots, roving cans, spools, rolls, etc. Sonoco Products Co., Hartsville, S. C.

180. These Extra Cushion Cork Cots Offer Six New Advantages—a 6-page folder which tells the story of the new Armstrong Extra Cushion Seamless Cork Cot from the viewpoint of the mill man. The folder describes HOW the new cot is of advantage to mills spinning cotton yarn; WHY it is better, and something about the method of manufacture, and also gives PROOF in the form of some tests that have been made with this new roll covering material. Armstrong Cork Products Co., Textile Division, 980 Arch St., Lancaster, Pa.

183. Schieren-izing—describing leather belt manufacture from the selection of hides through the various processes to the final tests, also showing illustrations of belts with unusually long service lives. Chas. A. Schieren Co., 31 Ferry St., New York, New York.

184. Speed Control Handbook T-35—new reference book in variable speed control, said to be the most complete and helpful book on this subject ever published. 112 pages and more than 200 illustrations of interest to every production executive, purchasing agent, superintendent, overseer and master mechanic. Reeves Pulley Co., Columbus, Ind.

185. Dulux—The White Finish That Stays White—New book describing the new ten-point finish for factory walls and ceilings, the finish that stays whiter, stays cleaner and stands repeated washings. E. I. du Pont de Nemours & Co., Finishes Division, Wilmington, Del.

186. F-7 Feeder Bulletin — Describing the better blending that is secured and the important cleaning operation that is added by using F-7 feeders in place of bale breakers. Saco-Lowell Shops, 147 Milk St., Boston, Mass.

187. The Wildman Single-Head Full-Fashioned Hosiery Machine—Literature on request from the Wildman Mfg. Co., Full Fashioned Division, Norristown, Pa.

188. Form 374—This form enables you to gather your own cost data on your sewing machines and determine whether new Union Special Machines will show big savings. Furnished free by Union Special Machine Co., 400 No. Franklin St., Chicago, Ill.

190. Warp Conditioning Units for Synthetic Yarn Slasher—booklet giving full details will be sent free to mill men who write on their company letterhead. Chas. B. Johnson Co., Paterson, N. J.

191. The Bahnson Humidifier—bulletin describing Bahnson Humiduct system which combines humidifying, heating, ventilating and air conditioning all in one unit, will be sent free on request. The Bahnson Co., Winston-Salem, N. C.

COTTON, Grant Bldg., Atlanta, Ga.

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KNITTING SECTION

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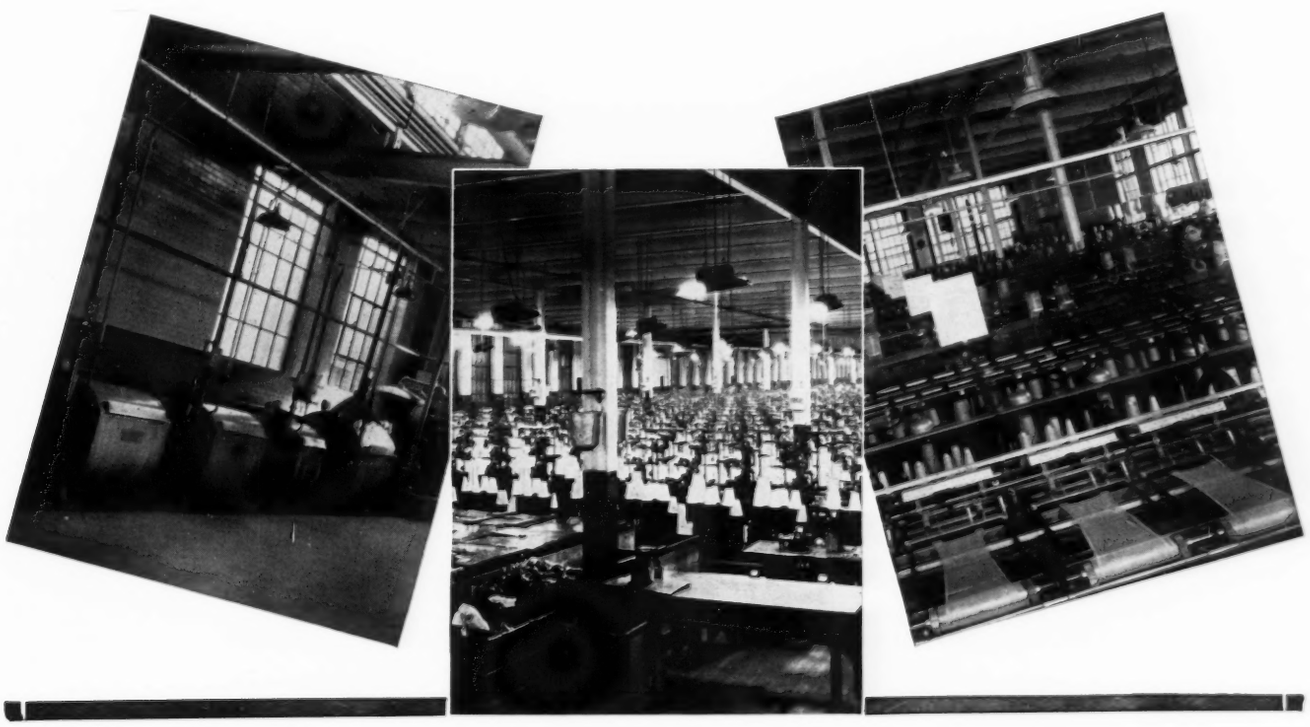

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WE mean right *mechanically*. Perhaps they are not as up-to-date as you desire, for some of your machines may not be latest models.

But, if important parts are worn so that with all your knowledge and skill your machines do not run efficiently, we can supply you from our (Laconia, New Hampshire) factory's stock, replacement parts precisely made from metals which our seventy-three years of experience have taught us are best adapted to your special needs. Parcel post, special delivery shipment will get them to you quickly.

Your machines will produce more hose with fewer imperfects, and you will increase the profits of your mill.

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"THIS IS THE SCOTT & WILLIAMS MACHINE AGE"

CUSTOMER RETURNS PROBLEMS

By M. M. Abrams

CUSTOMER RETURNS for ladies' hosiery are constantly on the increase, and each year this problem becomes more serious. In years past, when heavier constructions were worn, returns were much less. Women also took better care of their hose. Today, with the sheerer constructions, returns are far more numerous. With mark-up and profits much lower, heavy hosiery returns present a serious problem. Many advertised brands stress liberality in adjusting customers' returns; numerous stores do likewise as a store policy, and some stores even repair hosiery free of charge.

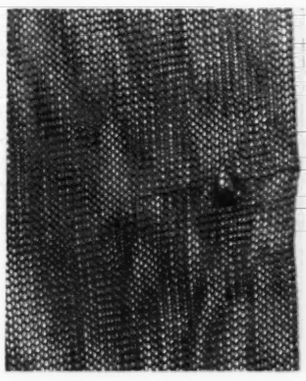


Fig. 1

Fig. 2

Many stores attempt with more or less success gently to break the sad news to their customers that sometimes hosiery should not be returned—that perhaps, strange as it seems, the wearer may be at fault and not the manufacturer. Occasionally the store is successful in its half-hearted attempt to educate its customers. More often the result is an infuriated if not an estranged customer which, in the vernacular of the retail trade "is a fate far worse than death". More often than not the store takes the easiest expedient—accepts the customers' returns and sends them back to the factory. Some stores are respectful of their own obligations and return only what they consider factory imperfections; others return everything and hope for the best. Hosiery manufacturers are put on the spot by such stores employing this procedure.

If the manufacturer accepts every return he stands to suffer a considerable loss; if he rejects some of the returns he may antagonize or even alienate his customer.

Too many manufacturers are pussy-footed about returns. If all manufacturers acted co-ordinately and refused to accept the return of all worn hosiery, a major part of the return evil would be eliminated. However, this procedure would be valueless if only a portion of the industry employed it. Stores could then claim certain mills were discriminatory and would proceed to boycott them. All the mills would have to do it and stick by their guns to make it effective. If the mills were more severe with the stores' returns, the stores would become more severe with their customers.

We have several illustrations showing customers' returns which we believe were unjustified. Fig. 1 shows a pulled thread—not only can the separation of the loops be clearly seen in the photomicrograph, but the heavy line on each side of the snagged thread shows how the thread has been pulled. This sharp line of thread is always a good signpost for a pulled thread. A skilled mender can work the thread back into place and the damage will be camouflaged and unnoticeable. In a pulled thread such as this the thread has not been broken and therefore needs only to be worked back into place. A pulled thread is not a mill imperfection. It undoubtedly occurs while handled by the store clerk or the customer. Hosiery salesgirls should be cautioned against wearing rings or bracelets, having rough or

Fig. 3

Fig. 4

chapped hands, or rough finger nails. All of these may cause pulled threads when handling hosiery.

Fig. 2 shows a stocking with a hole worn through at the toe. Either the woman wore hose too small for her or else her toe nails cut through the fabric.

Fig. 3 shows a hole caused by a snagged thread —caught on a rough part of the shoe or lining of the shoe.

Fig. 4 shows a stocking worn through by friction. The wearer evidently had the sole of the stocking twisted and part of the sheer fabric was under her foot and rubbed through the fabric—friction did it.

A Condition That May Be Remedied by Concerted Action of the Mills . . . . . .

Fig. 5 shows a run started by a break in the after welt of the hose. The wearer evidently wore clasp garters and hooked them onto the after welt instead of the double welt. Either the woman bought her stockings too long or wore her garters too long. The welt is made extra heavy so that garters may safely be fastened to it. The after welt is only half as strong as the welt because it is only a single thickness. Its main purpose is to distribute and absorb part of the strain on the boot silk caused by wear strain from tight garters, etc. It acts as a step-up of construction and material weight between the boot and the welt. If a stocking is too long and must be folded over for wearing, the welt should be folded outside the after welt so that the welt is nearest the garter clasp. It should be carefully noted in Fig. 5 how well the picot runstop has stopped the run at the end of the after welt. This means that the welt run can be sewed up and the boot of the hose is left unmarred. The runstop is in a good place—eight courses before the end of the after welt. If the run stop were at the last course of the after welt (just before the boot main thread is thrown in) it would not be as effective as a runstop and might even break open from ordinary wear strain.

Fig. 6 shows a stocking with a hole just above the heel. This is a difficult one to analyze and arrive at a correct solution. This may have been snagged on a chair or table leg though there is no direct evidence to substantiate this; it may have occurred from a blind stitch or a weak fiber—it's almost anyone's guess. The general appearance of the hose will have to be taken into consideration to see if the rest of the stocking shows evidence of unusual wear or harsh handling. This complaint will have to be decided on that basis and on the importance of the customer.

Fig. 7 shows mutilation of a stocking. A small hole developed from a snag. This is a place which is easily snagged on chair legs—the back of the calf. Then the wearer of this stocking shown in Fig. 7 pushed her finger through the stocking. If the stocking had broken out of its own account the runs would have been more numerous and as wide

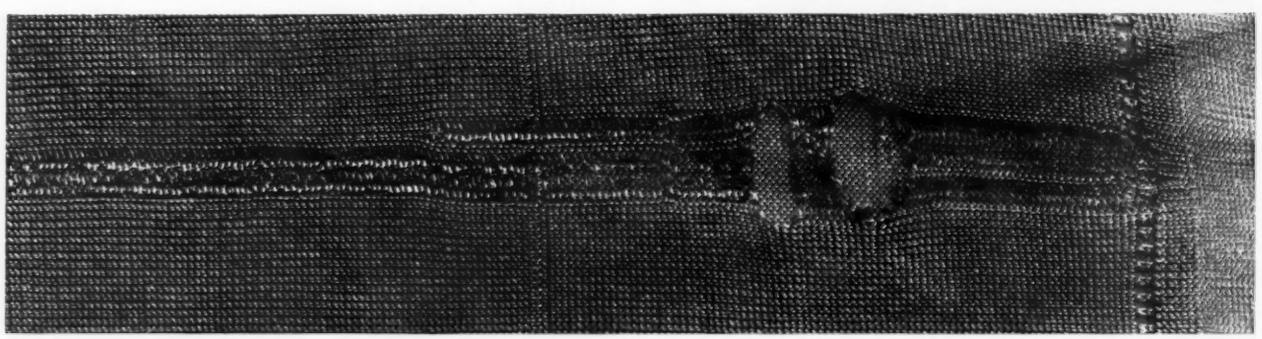


Fig. 5

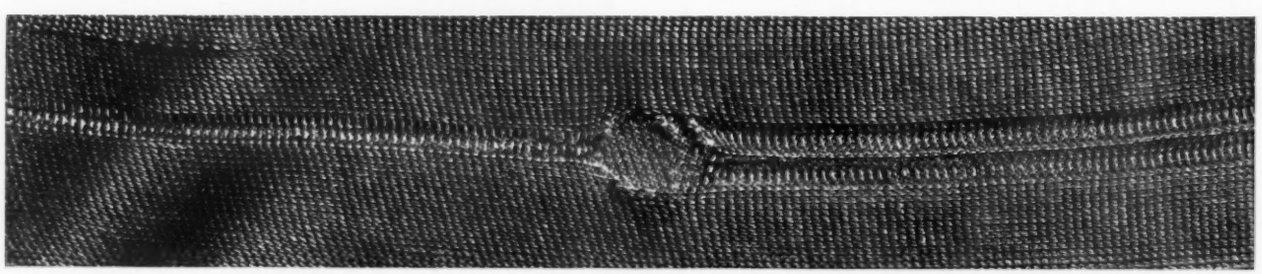


Fig. 6

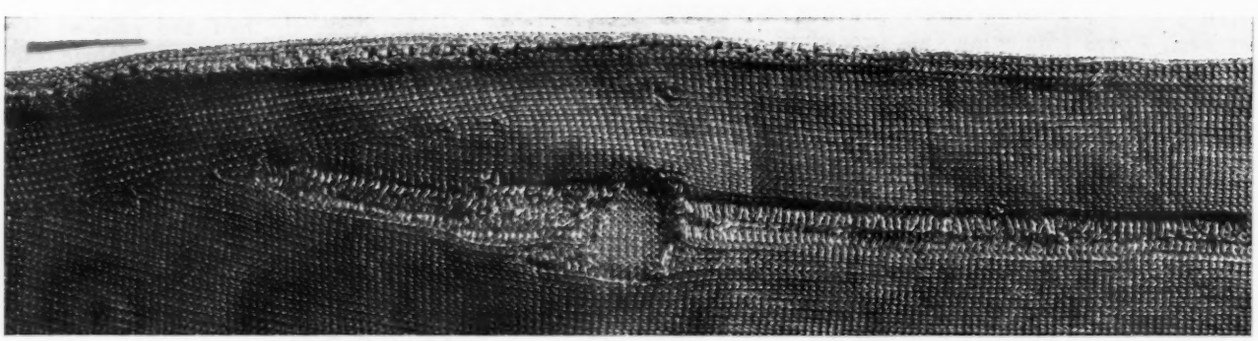


Fig. 7

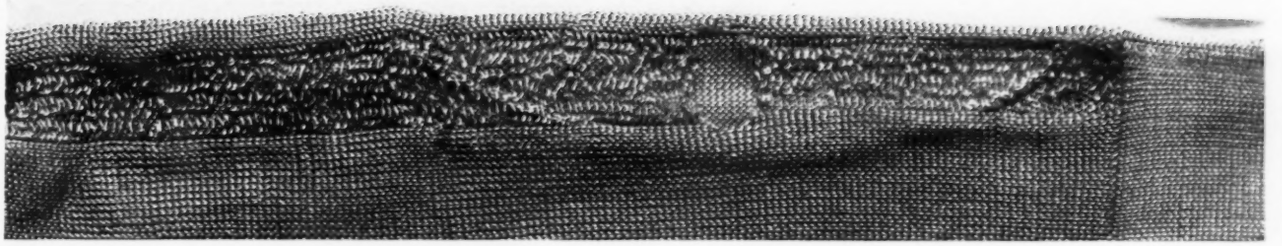


Fig. 8

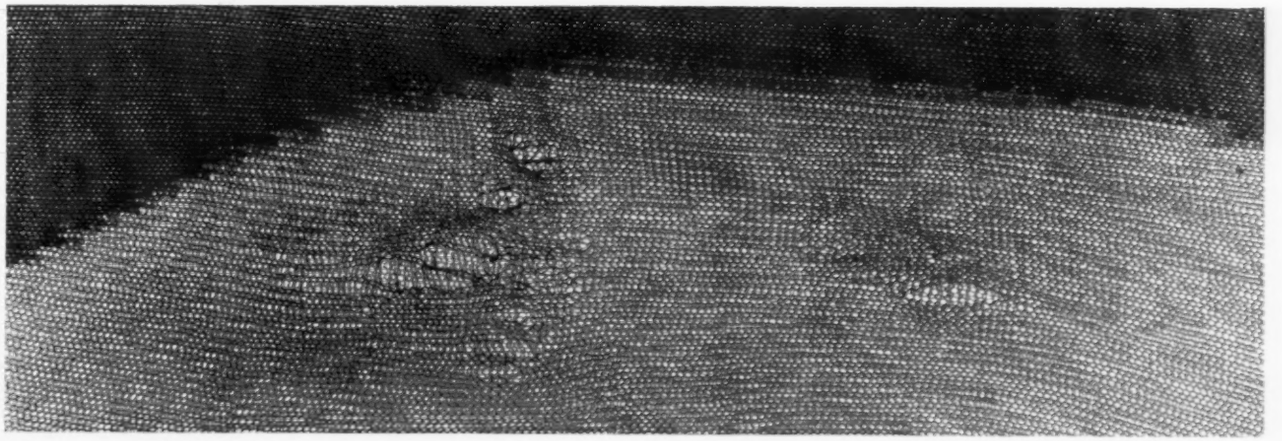


Fig. 9

as the full width of the holes.

Fig. 8 shows a welt run. It is a hole pushed through the single part of the welt near the opening at the inside of the welt along the seam. This is one part of the welt where the garter should not be fastened and every woman of average intelligence knows this. The customer is certainly not entitled to credit for this return.

Fig. 9 shows what happens to a stocking when it is rubbed against a rough surface. Either the shoe had a strap across the instep and the band rubbed against the stocking, or else the lining of the shoe was loose and rough and did the damage.

These are just a few samples of unjust returns made by customers. Careful adjustment of customer returns will prevent these unjust returns.

◆◆◆

Seal Awarded

The American Institute of Laundering has announced that its Laundry-tested and Approved Seal has been awarded to Seamans & Cobb Company, Hopkinton, Mass., for marking or insignia cotton as well as for sewing threads. The approval involves color fastness. All threads issued by the company will be laundry-tested monthly.

◆

Woodhead Receives Textile Colorist Award

Henry A. Woodhead, Jr., Graniteville, S. C., has received the *Textile Colorist* award for 1938 for outstanding work in textile chemistry and dyeing at Clemson (S. C.) Textile School. This award is given each year and is based on scholastic record. Mr. Woodhead has accepted a position with Ciba Company, Inc., New York City.

New Finish Said to Overcome Gas Acid Fading on Acetate

Sandoz Chemical Works, Inc., New York City, has produced a new finish which is applied by dyers, said to overcome the fading of fabrics containing acetate rayon because of the presence in factories, stores, and homes of gas acid fumes. The finish is declared of considerable interest to the fabrics and dress trades because it is stated that converters received a number of complaints during the past season of fading of fabrics while in work in dress manufacturing establishments. The new finish is marketed as Anti-Fume Finish. No change of shade occurs due to the treatment and the goods are said to acquire a satisfactory full hand. Pieces treated can be exposed to acid or gas fumes without any fading taking place.

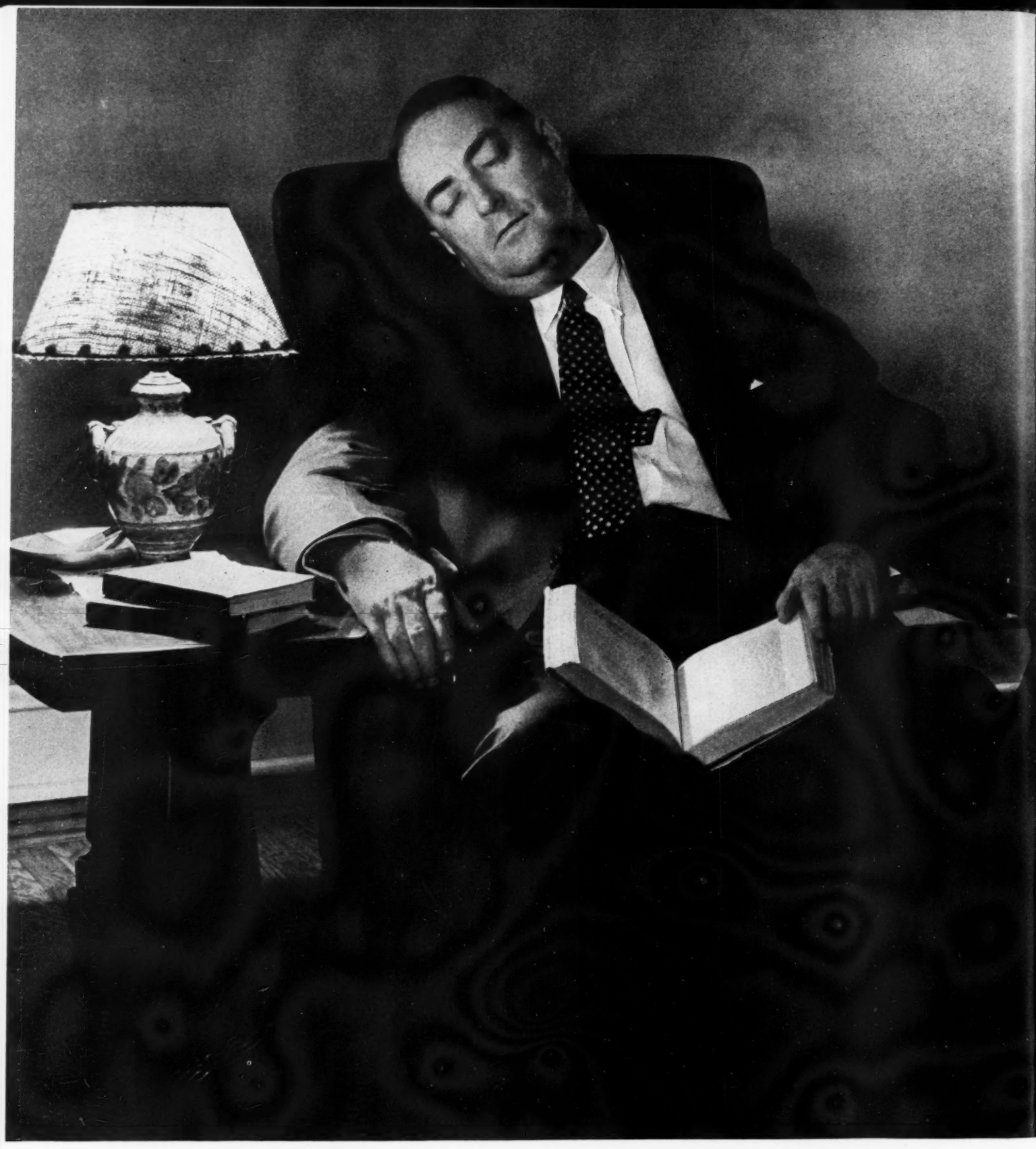
Tubize Granted Patent on Making Hairy Rayon

Tubize Chatillon Corporation has been named as assignor to patent No. 2,123,635, granted to James E. Moore, for a method of producing hairy rayon. Tubize recently started the commercial scale production of abraded acetate rayon yarn (hairy yarn), which is sold under the name of "No. 33 Acetate" rayon yarn.

◆

Improved Spiral-Wound Gasket

Azor Corporation, Newark, N. J., is manufacturing an improved spirally wound metal-asbestos gasket. It is said that this gasket, used for general purposes and recommended for use in standard and special flanges for boiler tube caps, etc., combines great mechanical strength, high resistance to corrosion and extreme temperatures. Termed *Flexiwound*, it may be used in most services a number of times.



"It is no advantage to be near the light if the eyes are closed"
OLD PROVERB

". . . . Tremendous strides have been made in improving the quality of full-fashioned stockings. A few years ago, a clear fabric was the exception and brought a premium price. Today a clear fabric is the rule and it is difficult to find a market for streaked merchandise *at any price!* . . . ."

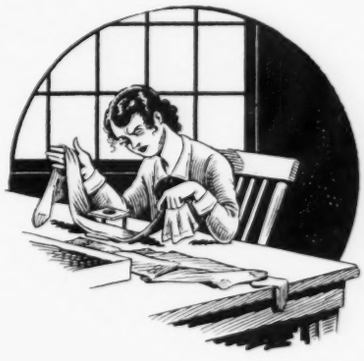
TEXTILE MACHINE WORKS • READING, PA.

Mismatching on Full-Fashioned

MATCHING between the leg and the foot is one of the most important points in manufacturing full-fashioned hose. Regardless of what grade of silk is being used, or who the manufacturer may be, when a poor match between the leg and the foot is noticeable it ruins the appearance of that stocking; consequently, it must be graded as an irregular, or second, thus lowering the net profit for the company.

While there is more than one method of checking machines for matching, other than the method used at our plant, I wonder if proper results are secured. By this I mean are the mills getting the lowest possible percentage of throwouts due to mismatching in the finishing room?

Here I will give some of the other systems used, and I will try briefly to outline some of their disadvantages.



First: The old method of measuring legger lengths on the yard stick on the knitters' cabinets. The knitting room without automatically controlled humidity will find this system will run a higher percentage of mismatching because the odds are strongly against them due to changeable climatic conditions; these result in more frequent machine adjustments which are usually required.

Second: The knitter being held responsible for his own lengths. When checking machines for courses or lengths individual heads should be checked with gauges before making adjustments, therefore this method will be expensive because adjustments on the machine should be made by fixers only. In the past few years the manufacturer has realized a smaller profit, and in order to alleviate the condition, he has stressed production almost as much as quality. Requiring knitters to count their own courses will result in machines running for a longer period of time without being checked—because the knitter does not want to lose any time.

Third: The system of employing girls to count courses with course counters or pick counters. While this particular instrument is accurate, it is beyond human control to keep one eye closed and count through a small glass with the other eye for a period of 6 or 8 hours and obtain accurate results. There is little efficiency in this system because dozens have to be taken out of production for the counting and sometimes it is the following day before this record is turned over to the fixer to make such adjustments as are necessary.

Fourth: Employing one man to check all machines all of the time for matching. This is profitable sometimes for the larger mills, providing, of course, that the man is a capable fixer.

Preferred: The system outlined next will work successfully in a mill of any size and will result very profitably to the plant that emphasizes efficiency.

The average fixer can service at least 30 to 35 machines, whether they be leggers, footers, or both. Each fixer in charge of a battery of machines should be held responsible for all course counting on the battery. This man should receive co-operation from the finishing room and he should be in contact with it frequently.

Machines on certain styles should be checked to see if the proper weights are being used. Checking leggers for courses should be done between the last boot narrowing and before the welt rods drop off the bridges. Always mark each head with chalk or a touch of black grease so that the marking will show up in the middle of the head; run the machine the desired number of courses desired and then measure with a standard scale or rule to the one-inch mark. This will show accurately whether the head is running loose, tight, or right. When counting courses on footer machines, be sure to get the desired amount of courses per inch counted before the machine starts pointexing as it is hard to get an accurate check after the cradle sole is being widened.

Make sure that the felts are changed at least every two months because the higher twist yarns cut them more than the yarns having ordinary twist. Never move a slur cam unless it is absolutely necessary. Be sure that the distance between the sinkers and the verge plate, after the slur cam has pushed the sinkers forward, is never more than the thickness of a divider of the corresponding gauge of the machine. Sometimes on older machines it is impossible to obtain this correct thickness, however, it should be kept as close as possible. When checking the machine for courses, don't merely go through the motion, check each head accurately.

Knitting rooms without humidity control will find it necessary to have the machines checked daily. Where a good humidifying system is in force, machines will hold the courses much better and weekly checkings are sufficient.

Mills that are buying silk in bale lots and that have throwsters alternate tints on the silk will find this is a great help in reducing mismatching. Higher twist yarns have a tendency to hold the courses much better than the ordinary tram silks.

If this system is used, it is the writer's belief that the number of irregulars and seconds caused from mismatching will be reduced.

Hosiery Perfection with Specially Finished Needles

To meet the demand for higher perfection in fabrics, we are now concentrating all the facilities of our needle department on one product—the new Royersford Specially Finished Needles. From the wire to the needle, each rigid test simulates actual operating conditions. What Royersford Specially Finished Needles mean in terms of finer qualities, increased volume and a lower unit cost can be observed in the production records of America's leading hosiery manufacturers.

The prescription for better knitting

ROYERSFORD NEEDLE WORKS, INC., ROYERSFORD, PA. : : Spring-Beard Needles, Narrowing Points, Picot Points, Lace Points, Welt Hooks, Transfer Points, Stand Points, Bent Points, Dull Points : : Sinkers, Dividers, Jacks, K.O. Bits : : Thread Holders, Carrier Tubes, Welt Bar Hooks, and Eyelets, Strap Cleats, Plate Hooks, Footer Hooks, Strap Hooks : : R.F. Clamps and Straps, Legger Straps, Tension Wires, Snapper Springs, Mend Hooks—for all machines : : *For Glove and Underwear Industries*—Milanese, Tompkins and Tricot Needles, Milanese and Tompkins Guides, Tram Travelers : : Development work. SOUTHERN REPRESENTATIVES: Dave Blevin, Provident Bldg., Chattanooga, Tenn.; Robert Baker, O.Henry Hotel, Greensboro, N.C.

ROYERSFORD NEEDLES

An Eye on the Knitting Mills

Ramseur (N. C.) Hosiery Mills, Inc., a new full-fashioned hosiery concern, have awarded contract for construction to C. M. Guest & Sons, Greensboro, N. C. The new 20,000 square foot plant will be of glass block construction and completely air condition. Cost of building is said to be about $60,000 with total investment amounting to about $300,000. The mill will be located on the highway between Ramseur and Siler City. About 300 persons will be employed. Plans were drawn by H. B. Biverstein, mill architect and engineer, Charlotte. D. B. McCrary, Asheboro, N. C., is president of the company

Henry A. Lineberger, secretary and treasurer, Knit Products Corporation, Belmont, N. C., has announced organization of the Belmont Throwing Corporation with capital stock of $200,000. W. S. Lee Engineering Corporation, Charlotte, N. C., has been engaged to draw up plans and work on the building will be begun soon. George W. Brooks, Burlington, N. C., will be plant superintendent.

Organization of a new $50,000 corporation to manufacture hosiery in Newnan, Ga., has been announced by S. H. Dyer and Arthur L. Fuller. Plans call for the enlargement of an existing brick building and the installation of approximately 25 machines. Officials hope to begin operation about September 1, specializing on men's hose.

Plans have been announced for the construction of the Liberty (N. C.) Industries Hosiery Mill, under the management of Marvin D. Smith, Jr., recently of Burlington Mills Corporation. Fiske-Carter Construction Company has been awarded a $30,000 contract for the construction. Full-fashioned hosiery will be manufactured.

The Excella Hosiery Mill, Inc., Stanfield, N. C., was recently destroyed by a fire of unknown origin. About $10,000 worth of stock was lost. Total estimated loss was $40,000. The property was about half covered by insurance.

Standard Hosiery Mills, Alamance, N. C., has installed 25 of the newest type Reading full-fashioned hosiery machines, bringing the total number of machines to 76. The plant was recently also equipped with an air conditioning unit.

It is reported that a Philadelphia manufacturer has made arrangements for opening a hosiery mill at Marshville, N. C. It is further reported that two truck loads of machinery have been received and that the building is being remodeled.

Melrose Hosiery Mills, High Point, N. C., have purchased 12 new Reading full-fashioned hosiery machines. They will be housed in the new mill building erected to serve as a full-fashioned plant.

The Adams-Millis Corporation, High Point, N. C., which has completed a new full-fashioned hosiery mill at Columbus, N. C., near Asheville, is installing machinery prior to beginning operations.

The William J. Abrash Company, Fall River, Mass., will liquidate its rayon and silk throwing machinery, and has appointed S. B. Schwartz, New Orleans, La., as exclusive liquidating agents.

A program to modernize the Magnet Mills, Inc., Clinton, Tenn., makers of full-fashioned hosiery, is now being outlined by company officials. Announcement has not been made as to when the work will start.

Siler City (N. C.) Hosiery Company, manufacturer of men's full-fashioned half-hose, has installed a Robert Reiner heeling machine and has placed an order for additional Einsiedel-Reiner machines.

It is understood that the Ellis-Carter Hosiery Mills, South Pittsburg, Tenn., will install 15 new looping machines at an early date. This will increase the number of employees from 35 to 60 persons.

A mill to manufacture rubber top slacks has been established at Dallas, Ga. It is equipped with 16 knitting machines and is known as Prewitt & Lester. L. E. Prewitt is manager.

Bradley Knitting Company, Milwaukee, Wis., has appointed Walter A. Hendrickson as superintendent in charge of production, succeeding Daniel F. Byrnes, resigned.

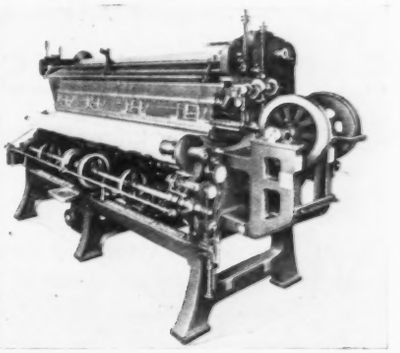
According to reports, a northern hosiery mill may be moved to Vidalia, Ga. The payroll of the plant is said to be $60,000 annually.

A charter has been granted the Milton Hosiery Company, Dover, Del., with an authorized capital stock of $50,000.

Graham (N. C.) Full-Fashioned Mill, Inc., has installed four full-fashioned machines.

New High Speed Warp Knitting Loom

Wirth Sales, Inc., 110 East 27th St., New York City, has distributed literature descriptive of the Model HSK 500 new high speed warp knitting loom, said to incorporate the latest perfections in modern engineering. The compact construction insures an entirely vibration-free running of the loom. The



Warp Knitting Loom

yarn let-in and roll-up device insures an unvarying density of the fabric. By means of a special device, the front guide bar can be lifted from the midst, which facilitates entering of threads. In the lifted position, the loom is locked against starting and mislaps are avoided thereby. The pattern wheels are continuously driven by a worm drive, and the small, almost round cams, are said to make a practically silent running of the loom possible. The machines are constructed for individual electric drive or belt drive and can be supplied with either ordinary warp beams or steel shafts for sectional bobbins. The speed is from 450 to 500 courses per minute.

◆

Higher Court Says "Ringless Patent" Void

In a unanimous decision of three judges, the U. S. Circuit Court of Appeals ruled the week-end of July 23 that the "ringless hosiery" patent of Charles A. Kaufman is invalid. This decision upholds that of Federal District Judge Oliver B. Dickinson, who dismissed the infringement suit of Julius Kayser & Co., and Textile Patents Corp., assignees of the patent, against Rosedale Knitting Company. The effect of the ruling not only knocks out Kaufman's patent claims, but removes the possibility of the assignees asserting claims for millions of dollars in royalties against mills which refused to take out licenses. The court held that the 3-carrier attachment lacks invention, and sharply criticized the "arbitration" proceedings in which other inventors conceded priority to Kaufman, as a violation of Federal anti-trust laws.

KNITTING KINKS

Operation and Fixing of S & W Model ES Machines

By Emmett Starr

(Article I)

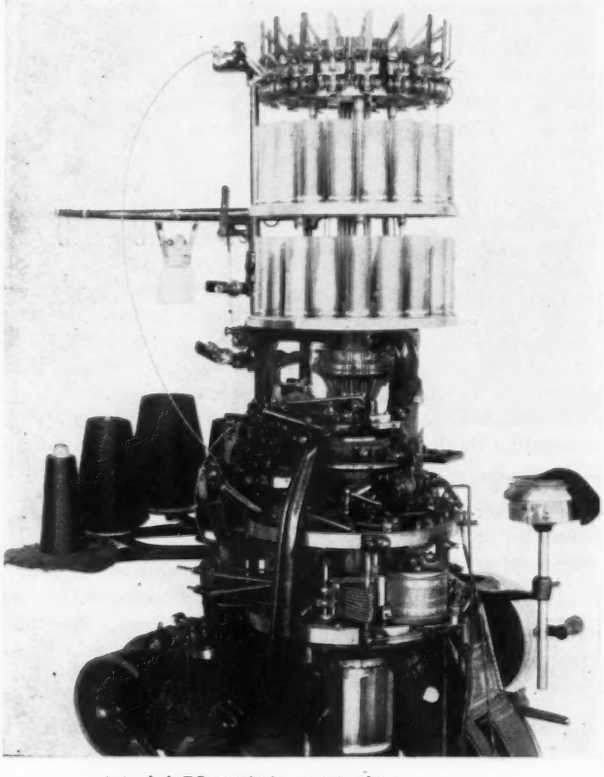
THIS series on the Model ES machine, of which this article is the first, pertains to the care, operation, and fixing, and also gives in detail the purpose of each part of the machine. It is assumed that the reader has before him a copy of the S&W catalog of parts so that the text may be followed as each Plate in the catalog is mentioned.

The first article lays the groundwork for the articles on fixing which will follow. Save your copies of the magazine so that you will have the series complete. Should you wish any particular phase of fixing discussed, the author will be glad to do so upon request through the editors . . . . . .

MUCH INFORMATION has been carried in COTTON on the various Scott & Williams machines, such as the B5, 13-step spiral, Model K, 25-step spiral, and the HH plain and spiral machines, and other machines such as ribbers, loopers, etc. Relatively little has been said of the S & W Model ES machines. As this type or model of machine is used extensively in the manufacture of men's fancy hosiery, such as vertical stripes, clocks, clocks and vertical stripes, combination, and all-over patterns, the writer will endeavor in a series of articles to cover the machine fixing problems and general maintenance of the ES machine. These machines are or can be equipped with horizontal yarn changers.

In the course of these articles we will use the Scott & Williams ES parts catalog for reference.

Perhaps there are many fixers and others who are interested in the making of hosiery or other knit goods that would like to know what "ES" means. Let's ease their minds and tell them at the start that it means "embroidery stripes".



Model ES 36-Wrap Machine . . .

The ES machines have many characteristics of the other Scott and Williams machines. There are several different models of ES machines, such as 18-bobbin or 36-bobbin single or front feed embroidery finger selector, and 36-bobbin color-within-a-color two feed or front and back feed embroidery finger selectors.

From now on, instead of saying embroidery fingers, we will call them wrap fingers for this is what they actually are. They wrap the yarn around the needle or needles when making a pattern.

We will begin with Plate 2 in the Scott & Williams ES parts catalog and discuss only such parts as are used exclusively on the ES machines. The controlling cam (200199) which controls the trick drum will be taken up later. The chain ratchet (6043) and drum driving gear (5479) are the same as on the other various types of machines, such as B5, HH, and Model K. The clutch shipper drum (3684AY) and rack wheel (100209) are somewhat different due to the auxiliary motions.

These auxiliary motions are made by the extra teeth on the belt shipper drum (100253Y) with the aid of the racking cams on the high speed gear (3691) on Plate 7 and the auxiliary shipping racking lever (3717) also shown on Plate 7.

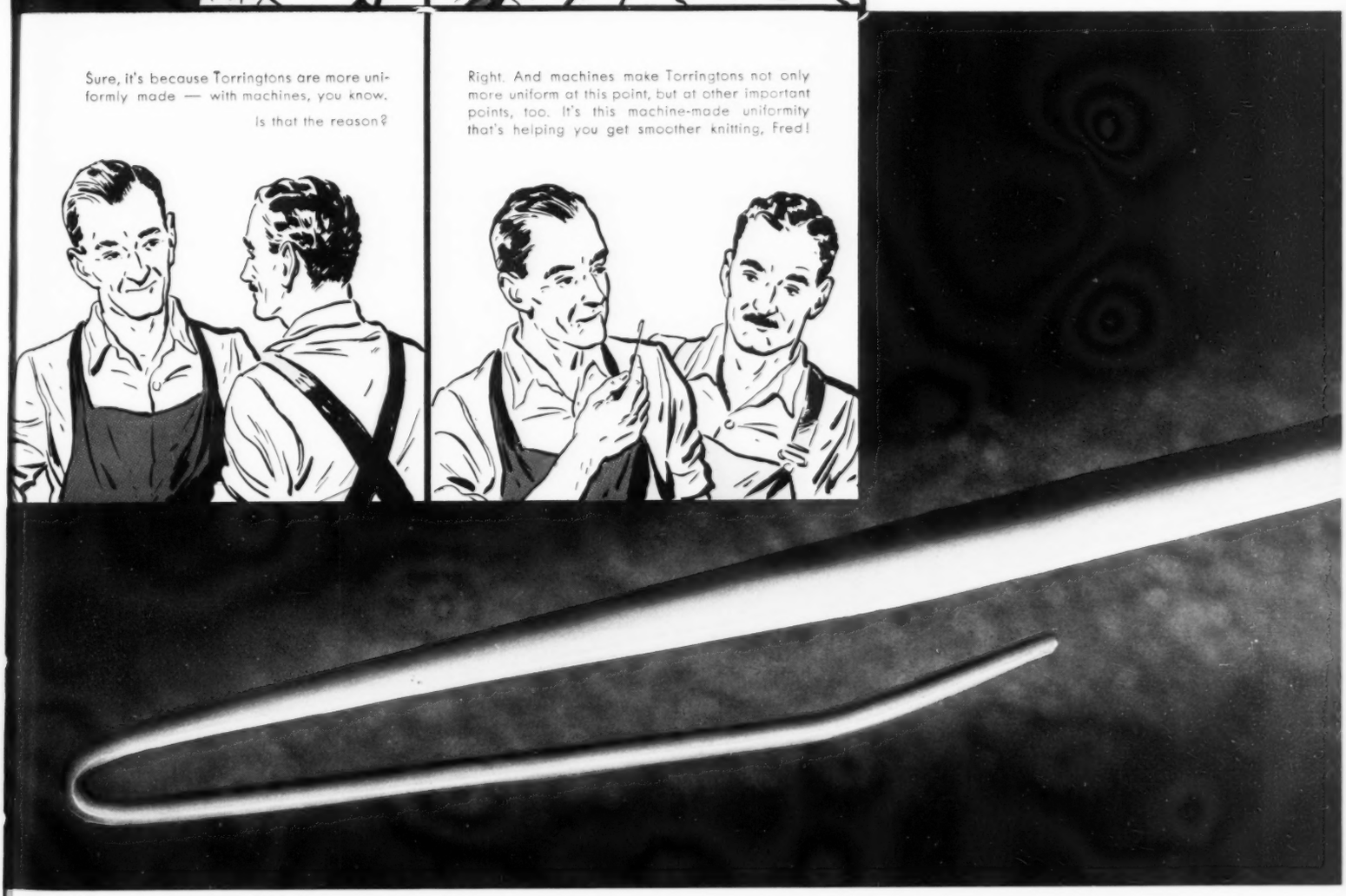
Going back to Plate 2, there are two sets of auxiliary racking cams on the high speed gear; (14432) and (300253) are the front cams and the rear cams are (14433). The front cams are adjustable, being placed close against the setscrew in the rear cams. So, in making an adjustment, turn the setscrew in or out as much as necessary, and then slide the front cam up tight to the setscrew. Keep the auxiliary racking cams tight. A serious jam-up can be caused by one of these cams coming off or working loose. These cams should be lubricated at regular intervals.

The auxiliary clutch shipping racking lever

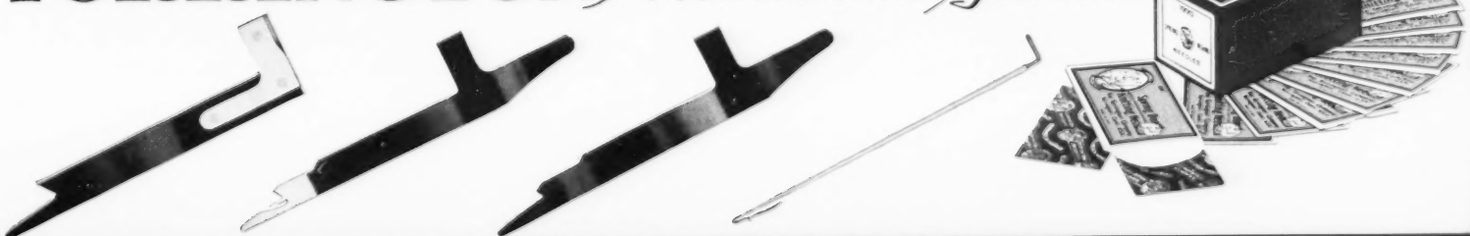
TORRINGTONS GIVE YOU MORE FIRSTS!

So you're getting more firsts now, too, eh, Fred?
Yep. You were right, Tom, when you said we'd get smoother knitting with Torringtons.
No doubt about it—machines make more uniform needles. Take the diameter of the hooks, for instance.
They more or less determine the size of the stitches the needles lay, don't they?
Sure, it's because Torringtons are more uniformly made — with machines, you know.
Is that the reason?
Right. And machines make Torringtons not only more uniform at this point, but at other important points, too. It's this machine-made uniformity that's helping you get smoother knitting, Fred!

● No one knows better than the man on the machine how much good needles count in getting a high percentage of firsts. Listen in on this knitting-room conversation—and remember, Torrington Sinkers, Dividers and Split Dividers are machine-made also, with the same strict adherence to accuracy of detail.



TORRINGTON *Needles and Sinkers*



When a mill decides to improve the quality of its knitting, the first move is usually to improve the quality of its knitting equipment. Surprising how many mills turn to Torrington Needles when the quality of their work must go upward. Surprising, too, how often it is that once a Torrington user—always a Torrington user. If improvement is your aim, begin by using none but Torringtons—the machine-made needles in the famous red and green box.

THE TORRINGTON COMPANY, TORRINGTON, CONN., U. S. A.

The Torrington Company	1640 Fairmount Ave., Phila., Pa.
The Torrington Co., Inc.	200 Fifth Ave., New York, N. Y.
The Torrington Company	538 South Wells St., Chicago, Ill.
The Torrington Company	Guilford Bldg., Greensboro, N.C.
The Torrington Co., Ltd.	137 Wellington St. W., Toronto 2, Ont.
E. G. Paules	Bendix Bldg., Los Angeles, Calif.
The S. M. Supplies Co.	210 South Street, Boston, Mass.

Factories at

Torrington, Conn.
Upper Bedford, Quebec
Coventry, England
Aachen, Germany

Torrington LATCH Needles

(3717) shown on Plate 7 consists of pawl (14423), held against the belt shipper drum by the pawl spring (10704), and an adjustable racking lever plate (14424). Before making any adjustments on the auxiliary racking cams and the auxiliary racking lever plate, be sure the trouble is not due to some other part of the machine as it is seldom that any adjustments have to be made on the clutch shipping racking lever plate or the racking cams.

There are other racking cams (14095), shown on Plate 2, on the high speed gear. These cams are spiral racking cams which we will take up in the near future along with controlling cam (200199). Should it be necessary for any reason to adjust the drum driving gear (5479), which is used to advance or retard the main pattern drum, bear in mind that it will be necessary to relocate the belt shipper drum (100253). Failure to do this will cause the auxiliary motions not to function properly.

The best position to set the pattern drum (100254) is after the short main rack is taken just before the heel, but before the auxiliary rack. At this point the front of the ⅜-inch drum cam, which inserts the cam for drawing the medium and long butt needles under the point of the switch cam, is close against the clearing cam thrust bar or rod (200449) on Plate 11, which is resting on a ¼-inch drum cam.

The belt shipper drum is adjusted so that at the end of the main rack going off of the heel, the belt shifter will drop off of the slow speed cam on the belt shipper drum with 1/16-inch clearance. After the short main rack is taken at the end of the heel, the auxiliary pawl is adjusted so it will drop into the tooth in the belt shipper drum with a clearance of 1/32-inch and the steel racking lever plate (14424) on Plate 7 is adjusted so that the racking cam (14432) on the high speed gear will move the belt shipper drum 15/32 to ½-inch so that it will allow the main racking pawl to drop into the tooth on rack wheel (100209) on Plate 2 so as to continue the motion of going out of the heel. The auxiliary racking cam (14432) on the high speed gear is set so that it begins to operate the auxiliary pawl when the cylinder is at a standstill at the end of the reverse stroke. This racking cam also racks the belt shipper drum after the short main pawl rack going out of the toe. The auxiliary cam (300253) on the high speed gear is used only at the transfer. After the top has been placed on the needles, a main rack 11/16-inch long inserts the right-hand stitch cam bracket at the beginning of the low butt needles, releasing the sliding finger operating lever lock (200060) shown on Plate 22 and then drops the ring top yarn into the low butt needles about two inches before the first medium butt needle. The left-hand stitch cam bracket is entered about the middle of the low butt needles. Just before the end of this main pawl rack, the auxiliary racking pawl drops into a tooth in the belt shipper drum. This auxiliary rack moves the ring top finger forward to lay the yarn under the hook of the first medium butt needle as it is drawn down by the left-hand stitch cam and then lets it drop back away from the needles. This auxiliary rack is necessary because the main pawl has almost ended its forward stroke by the time the first medium butt needle reaches the running down or the left-hand stitch cam. Be careful when adjusting the ring top finger to see that it is not pushed too far forward because it may come in contact with the hooks of the needles, which may cause the hooks to be bent or broken at the start of knitting.

Plate 3 shows the belt shipper drum in detail. It will be noted that the shipper drum is made in two parts, the hub (3689) and the shipper ring (100253). The shipper ring is fastened to the hub with three screws (15158) and washers (15004). The shipper ring can be advanced or retarded on the shipper drum hub with the aid of setscrew (15112). The stop cam (200438) is used to stop the machine at the completion of each sock.

As is customary on all other Scott & Williams machines, the belt shipper drum is arranged so that the belt will run on the high speed pulley in the leg and foot, and on the intermediate pulley at the beginning of the stocking, and at the heel and toe.

Plate 4 shows the main drive shaft in detail; similar shafts are used on all other Scott & Williams machines. The bevel gear pinion (10890) attached to the bevel gear (5555) is used to drive vertical drive shaft (300031) shown on Plate 30. The bevel pinion gear can be advanced or retarded by setscrews on the bevel gear. The vertical drive shaft will be discussed in a subsequent article.

Also on Plate 4 are shown the belt shifter shaft (10312), belt shifter, clutch fork, ratchet pawl lifter, pawl lifter plate, chain reading lever, and trick wheel controlling mechanism.

The ratchet pawl lifter plate (8012) is very important. When certain heights of move links raise the lifter plate it allows the main racking pawl to fall in a certain tooth to move the pattern drum. If the move links or the pawl lifter plate are worn, they will not lift the pawl lifter high enough so that the main racking pawl will fall into the proper tooth on the rack wheel (100209) on Plate 2. A heavy, tight, or short spring that holds the pawl lifter down will cause unnecessary wear on the pawl lifter plate and links. To keep the pawl lifter plate from wearing out too fast, loosen set screws (15109) on Plate 1 in the frame of the machine, which hold the belt shipper shaft in place, turn the shaft downward until the ratchet pawl lifter plate is resting on the plain links, then move the shaft upward so that the ratchet pawl lifter is resting on the stud (6689) that holds the lifter in place on the belt shipper shaft, just high enough so that the ratchet pawl plate does not ride on the links. Be sure to tighten the setscrews that hold the belt shipper shaft in position. Practically all the wear of the ratchet pawl plate is caused by the plate resting continuously on the plain links. When the plate has become badly worn and its edges are sharp, it will cause the move links to wear. Badly worn pawl lifter plate and move links will cause the main racking pawl not to engage the proper tooth at the proper time, which means perhaps a very serious smash-up. This also

can apply to the other Scott & Williams machines.

On Plate 7 are shown the racking levers (3796) and (3797), racking lever roll lever (3795), racking rod roller (11490), and pawl stop (5930). These parts are similar to those that are used on other models of Scott & Williams machines. Auxiliary racking lever (3717) is also shown on Plate 7.

The head support bracket base (4219) shown on Plate 8 and the head support bracket (4316) are the same as those used on other types of 25-step spiral machines. The lower jack shaft (10877) and jack shaft operating lever (4262) also are the same as on the 25-step spiral HH and Model K machines. The only difference is the functioning of the jack shaft operating lever. The lever and cams fasten on the side of the main pattern drum, in conjunction with lower selector lever link (14091) and lower selector finger or make-up finger (14081), shown on Plate 14, which controls the start of the clock patterns in the leg of the sock and the finish on the pattern in the foot. Do not have the lower finger selector ride too hard on the butts of the cylinder pattern jacks because it causes undue wear on both the selector and the butts of the jacks.

Plate 9 shows the bobbin stand (6188), yarn guide (100115), and stop bracket (100134), with which all fixers are familiar.

(To be continued.)

Elastic on Hose

THE FOLLOWING INQUIRY was received by COTTON and passed along to several mill men: "1. What is the production of an operator sewing Lastex on 4-thread 45-gauge hosiery with a 6-thread silk sewing edge of 20 courses which is not turned or finished in any way to prevent raveling? We use marked Lastex, and the Fastlock operator does nothing but sew the stockings. The cutting is done by another operator. 2. What production can we expect on knee-length hose Lastex joining with a Singer 107WL zigzag machine? This is done after the stockings are seamed. The operator sews around the sides and across the top of three sides of a half-inch lap. The operator does nothing but sew. Trimming of threads is done by the gray inspectors."

The first reply received: "In sewing on the elastic webbing, our operators get 9 and 10 dozen per hour, and the operator running the closing machine will get approximately 24 dozen per hour."

The second reply to the sewing on of the Lastex said that from 95 to 100 dozen was the average for 8 hours, with 110 dozen per hour being the highest number done in 8 hours in this plant.

Another answer to the first question was: "The average production obtained with the Fastlock machine on hosiery of the type mentioned is approximately 110 to 125 dozen per 8-hour day. For the closing operation for which the Flatlock machine is employed, the average production per 8-hour day ranges from 275 to 310 dozen. To be more accurate, I should state that the average is a figure that should be arrived at somewhere between the minimum and maximum figures quoted. However, there is a difference even among operators in one mill, some girls naturally doing much better than others. As you know, no hem is turned on the stocking when applying elastic with the Fastlock machine, but we have demonstrated the process necessary for inserting approximately four strands of mercerized thread at the stocking top in order to insure a firmer foundation for the Fastlock seam."

Another answer: "We find that our operators average 80 dozen per 8-hour day in the sewing on operation. We use another operator on the closing operation, getting an average of 150 dozen per 8-hour day, including the clipping of the ends. Our elastic is marked and we use the Fastlock and the Flatlock machines."

Taking up the second part of the question, COTTON received this answer:

"In connection with joining elastic on knee-length hose, using 107 WL zigzag machine, the elastic is lapped about one-half inch and the two ends stitched down. The approximate production on this operation is 75 dozen pairs of hose per 8-hour day. We feel that this production is representative of the average to be expected from the use of this machine. There is also a 58-19 machine that produces a tack consisting of 42 stitches and at the completion of each tack the thread is tied and trimmed automatically. Allowing four tacks on each pair of hose, the average production obtained on this machine is 100 dozen pairs per 8-hour day."

The foregoing answers are representative of the information and service available through COTTON. Send in your questions.

Dropped Stitches

EDITOR COTTON:

I will attempt to give at least a partial solution to the problem submitted by "CONTRIBUTOR NO. 6690" on page 124 of your August issue. He said that in knitting an all-silk heel on his 42-gauge full-fashioned machine, he knits a separate section of mercerized yarn for topping waste between the heel and has considerable trouble with the end needle on either side losing its stitch which then runs down; he also said that he finds that the end needles of most heads do not have a stitch on while knitting the welts, but as soon as the first narrowing is made this trouble stops.

The dropping-off of selvage stitches anywhere on a full-fashioned machine is generally caused by improper setting of the snapper cam and too much tension on the snappers or in the yarn itself.

If the yarn has too much tension when the stitches are shedding off the nose of the sinkers, the selvage stitch will be pulled or raveled out, before entering the knocking over bits, leaving the selvage needle empty. If, after the snapper tension is released, the stitch continues to drop off, the trouble is in the yarn tension coming from over the top of the machine.

Some method must be devised to lessen the drag

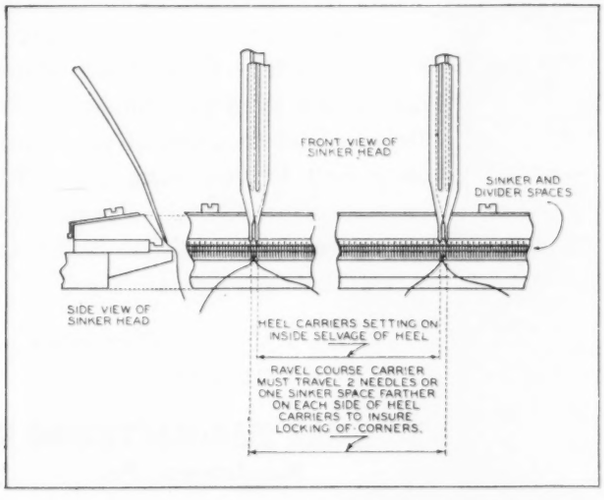
or tension behind the snapper. From the question it is hard to determine whether our contributor has his ravel course carriers set between the right spaces. Generally, dropping of the selvage stitches at this point will not cause them to run down as stated, providing the carriers are in the proper position. The usual method of knitting the first course of ravel or cotton is to knit it in with the last course of the main silk. In this course both ends are knitted simultaneously, forming a lock stitch, preventing the selvage stitches from running down.

CONTRIBUTOR No. 6697

EDITOR COTTON:

Answering "CONTRIBUTOR No. 6690", in the matter of his problem with dropped stitches in the ravel split on his leggers, whose question appeared on page 124 of the August, 1937, issue of COTTON, it is our judgment that his trouble is purely one of improper setting of his yarn carriers. This could be defined under two conditions, first, improper adjustment of stops throwing the entire carrier rod out of adjustment, second, improper adjustment of a part of yarn carriers or fingers on the carrier rods involved.

We have found that the trouble may be almost eliminated by the correct setting of the carriers, which means that the carrier rod stops and the individual carrier finger must be set so that the yarn finger, while at rest, will center over the divider one needle removed from the sinker and the two needles involved in the "split".


FRONT VIEW OF SINKER HEAD
SINKER AND DIVIDER SPACES
SIDE VIEW OF SINKER HEAD
HEEL CARRIERS SETTING ON INSIDE SELVAGE OF HEEL
RAVEL COURSE CARRIER MUST TRAVEL 2 NEEDLES OR ONE SINKER SPACE FARTHER ON EACH SIDE OF HEEL CARRIERS TO INSURE LOCKING OF CORNERS.

A sketch is submitted showing what we believe to be the correct setting of the carriers, and which we believe will correct the trouble this man is having with dropped stitches both at the beginning of the welt and at the ravel split.

CONTRIBUTOR No. 6696

EDITOR COTTON:

This is in answer to the question asked by "CONTRIBUTOR No. 6690" on page 124 of the August, 1937, issue of COTTON. He is having trouble with the ravel course not coming out even at the edges.

I suggest that he check the friction thoroughly to see if it is possibly slipping a little. Or, it may be that the carrier is not correctly adjusted. If this does not remedy the trouble, there is the possibility that there is not sufficient tension on the mercerized yarn.

"CONTRIBUTOR No. 6690" also has trouble with welts not coming out right at the edges. He should check the friction of the carriers and shock absorbers because most likely the shock absorbers are set too close, causing this trouble after the machine has narrowed.

CONTRIBUTOR No. 6724

An Old-Timer Says—

(Continued from page 85.)

of line, think what a chance some young electrical engineer has to lop off about 25 per cent of that loss and soon be able to write his check in seven figures.

Of course mechanical engineering has many things almost as startling as the electric light bulb mentioned. For example, I believe it is claimed that your auto engine gives you only about 25 per cent in actual power out of every dollar you put into your gas tank. That is, the four-cycle engine converts only about 25 per cent of the gas into actual B.T.U.s. Do you happen to know the difference in a four-cycle gas engine and a two-cycle gas engine, JIM?

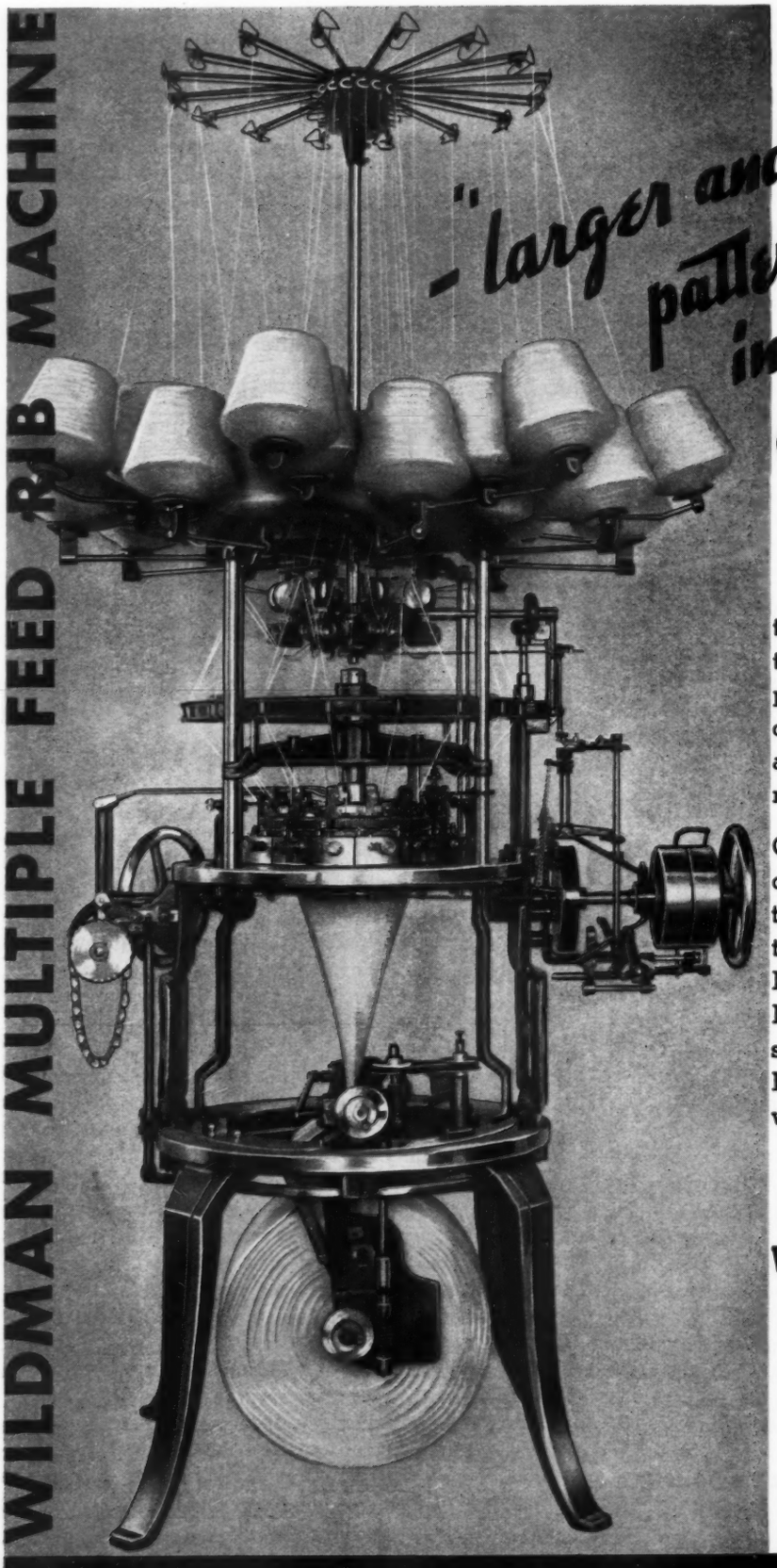
Oh, for goodness sake, OLD-TIMER, *cut it out. To hear you talk a person would think that no one knows how to do anything.*

And from an economy and efficiency standpoint, JIM, that statement is almost true; in fact, it seems that in practically all industries there is a lot to learn, with unlimited possibilities for improvement. It is almost depressing to think how wasteful all manufacturing is in the use of raw products. In electricity, in coal, in oil consumption, and in the consumption of practically everything else, we are using double, and in most instances, three times as much as we should be using to obtain the same results. If these facts do not show that the door is wide open for young men who are blessed with an overdose of imagination and initiative, then OLD-TIMER is seeing things upside down, or something. This whole United States is comparatively young in all of its resources, its manufacturing, and abnormally wasteful in the use of its raw products, and my prediction is that in the next few years we are going to see such progress that none of us ever dreamed of, and among the first of these will be a complete revolution in the expensive and cumbersome methods of handling and marketing cotton, along with new uses for the cotton fiber, which will create new industries, new employment for thousands and new payrolls for the South.

Hope you are right, OLD-TIMER; *we surely do need something to help out old King Cotton.*

The profit of a hosiery mill is, to a great extent, dependent upon the number of firsts it can produce.

The tinctorial strength of a dye is tested, among other reasons, to determine the maximum amount that can be used for a dark shade without wasting it.



"larger and more varied patterns, due to increased number of feeds, and . . .

this modern, 16 feed machine (illustrated) makes possible, increases in production up to 100%, with increase of capital investment of only 30%, and with an added power cost of no more than 35%.

Other advantages which will be quickly apparent to you on inspection, include — Furnishing Wheels that assure even yarn tension—Gear Driven Dial to prevent pinching—New Belt Driven Take Up — Non-stop for New Cones—Easier Cloth Inspection — Swing-Out Roll — and withal, flawless operation.

Write TODAY for Descriptive Literature

WILDMAN MANUFACTURING CO.
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WILDMAN
THE WORLD'S STANDARD

WILDMAN MANUFACTURING CO.
NORRISTOWN, PA.

TRENDS and HIGHLIGHTS of the KNIT GOODS MARKETS

Hosiery and Underwear More Active. Branded Full-Fashioned Prices Unchanged for Fall. Men's Knitted Briefs Market Feature. Women's Seamless and Men's Half Hose Bright Spots.

Philadelphia, July 16, 1938

FOR THE FIRST FIVE MONTHS this year hosiery production of all types was 6.7 per cent smaller than in the corresponding 1937 period but there were some branches of the trade that did much better than others. Women's full-fashioned was outstanding in that it showed a gain over the 1937 five months while good showing was made by anklets, women's seamless and half-hose. Bad showings were made by ribbed goods and woolen goods. With cotton and yarns advancing there has been a better tone in the cotton underwear market and it is now felt that the latter months of the year will be much better for this trade, whose inventory position has improved, more than was expected earlier. Outerwear demand is disappointing but here too price advances in wool and silk and cotton are bringing a fair volume for fall although these knitters say this has not been large up to the present date. Prices of all types of knit goods are steady and firmer than seen any time previously this year. If the commodity increases continue, higher goods prices will come late this year.

Full-Fashioned

Fall prices on branded full-fashioned have been named with these lists showing no change and remaining unchanged at $6.00 for the suggested 79 cent retailer. There were a few reductions made in the highest priced full-fashioned. There has been a conservative improvement in orders booked at the leading mills which began a month or so back. May shipments for example being 8.8 per cent larger than May 1937 with indications this gain will continue. It will probably mean this year will see production records broken for this type hosiery. The advance in silk will make for heavier buying because some buyers feel this will bring about later this year an increase in full-fashioned prices. Local establishments have been somewhat quiet this summer so far but now show signs of getting going again as soon as the wage matter is settled with the union.

Good sized orders for anklets for next spring have been placed in the last two weeks but this has been mainly in the so-called low-end goods as the high styled lines although these are due to be opened in the next few days. Production of anklets for the first five months of this year was 5.4 per cent smaller than the same period in 1937 but was 27.8 per cent larger than in the same months in 1935. Jobbers have been placing orders with mills for fall anklets and deliveries on these orders will begin soon in order that the goods may be delivered and made ready for retail sales in Auguest to attract the pre-school buying of such goods. Retailers have been advertising anklets at cheap prices in recent weeks and report moving a large amount of goods which makes for a coming good run with the knitters. Some fall prices are a shade lower.

Courtesy Proctor & Schwartz, Inc.

Men's Half-Hose

Men's half-hose has been more active. There have been some slight reductions made in wholesale prices which have proved attractive to buyers. One firm, Phoenix, reduced its price on the number formerly at $3.80 to $3.60 with a few pure silk numbers at $3.65. The retail price has been lowered from 55 cents to 50 cents, effective August 1. It was reported other branded firms made similar reductions including Interwoven. Men's half-hose shipments in the first five months this year were 7.8 per cent under those for the same period in 1937 but they were larger than either 1936 or 1935 in the same five months. May 1938 shipments were 9.2 per cent larger than May 1937 confirming recent market statements these were showing nice gains. So far as wool half-hose goes, jobbers say they and retailers carried over sizeable stocks from the mild 1937 winter but this may not prevent a fair season.

Seamless

There has been a decided improvement in silk seamless hosiery which is now receiving a good volume of orders and inquiry. In recent weeks there have been indications that demand for the coming months will be much larger than anticipated earlier. The poor business conditions of recent months seem to have brought about a larger demand for seamless silks which retail from 19 cents to 50 cents per pair some of which came from women that used to wear full-fashioned. Rayon seam-

less has also improved but not so much as silk and a steady volume, with no great change either way, has been done in seamless cotton. Taylor R. Durham, of Charlotte, secretary of the Southern Hosiery Manufacturers Association, confirmed this when he said there has been substantial improvement in the cheaper lines of hosiery with signs this expansion was going to become even more marked.

Underwear

The advance in cotton and cotton yarns has given the underwear market a much brighter aspect and trading has been somewhat more active at wholesale and with the knitters but as yet there has been little excitement. There is agreement that stocks of underwear have been overstressed and that later this year the heavyweight stocks will be much smaller than we thought which will make the season a larger one for knitters than we thought earlier this year. In fact a recent survey showed that stocks now were very close to normal and there is talk that if the general business picture continues to improve there may later in the year be a scramble for underwear because there has been severe curtailment of production among the mills for so many months to say nothing of subnormal buying and using up of stocks by retailers and wholesalers. The higher yarn market has caused mills to stand firmer on quotations.

◆

Hosiery Union Discontinues National Wage Pact Policy

Emil Rieve, president of the American Federation of Hosiery Workers, on June 19 following a meeting of the national executive board, announced that the union policy in the full-fashioned hosiery industry would be to seek individual agreements with manufacturers rather than to continue the present policy of a national labor agreement with a uniform wage scale for the bulk of the industry in the North. Mr. Rieve's statement in part was as follows: "After a thorough discussion of the problems facing the industry, the executive board of the American Federation of Hosiery Workers has come to the conclusion that the union can best aid in solving these by adopting a policy of negotiating individual contracts with the manufacturers. We feel that the adoption of this policy marks a step forward in the union efforts to bring order out of the chaos in the full-fashioned hosiery industry. Other factors than wages and hours have an important bearing on the conditions of the mill. These include financial structure, the marketing policy, efficiency of the machinery and the method of operation. These problems affect individual manufacturers differently. We can not solve all of them with a uniform agreement. New conditions have come into the hosiery industry which must be dealt with progressively. The union feels that by the method adopted it will be able to do its share in stopping migration of the hosiery industry, in bringing new machinery into the unionized portion of the industry and in keeping union mills working."

◆

Opinion Divided in Union's Wage Policy

There are some in the hosiery trade who believe that the new policy of the hosiery union in seeking individual contracts of the manufacturers as a substitute for the national agreement will tend to weaken the hosiery price structure in full-fashioned goods but there are as many others who say such results cannot be logically expected. At the time the new union policy was announced, John H. Vogt, president of the Keystone Hosiery Manufacturers, Inc., representing fifteen mills in the Reading district, predicted it would have the effect of breaking prices. "Where in the past the union stood for uniformity, they now have reversed themselves entirely," Mr. Vogt said. "It will not stabilize the market. Individual contracts will work for more competition and there will be a greater variance in wages in the way they negotiate individually and with each contract on a different basis." Mr. Vogt made it clear that he was speaking as an individual manufacturer. Mr. Vogt indicated that he felt uniformity in wages should have been continued by the union so far as possible by applying uniform rates for certain types of machinery. He also said the present differential in the union schedule between the rates paid workers on the latest type of machinery and that from 8 to 10 years old is too great. He add-

FORECAST

(Opinion offered by COTTON'S market correspondent)

Philadelphia, July 16, 1938

This forecast dated May 16, 1938, asked the question, "Will Improvement Come This Fall?" This can be answered definitely now that there will be a substantial improvement by fall and in fact this has already come in the primary markets, meaning raw materials and yarns, with signs it is spreading into manufacturing and later will come in consumer demand. While this correspondent did not predict the sharp upturn that has come in such commodities as silk and cotton, he did say three months back: "While there is nothing in sight now to cause the slightest worry on this score it is only fair to point out that buyers of all types of merchandise can withhold purchases to as much injury to themselves as too heavy buying did a year or more ago." This has occurred and advances of importance have come in most textile commodities with silk showing the most marked increase.

This came late in June and early in the present month at a time when the stock and bond markets were advancing so that most agree this indicates there will be much better business for textile manufacturers during the balance of the year with indications volume and profits will be somewhat larger than expected even now. Government spending will benefit textiles because of the aid this brings to consumer industries.

Up to the time of writing improvement has been confined to a large degree to advances in textile commodities, which has been truly impressive, and next to sharp increases in yarns, and the latter has been mainly in cotton and silk with rayon and worsted showing no change although more active in rayon. There is no doubt but by the time this is published higher worsted yarn prices will be here and in the fall higher rayon yarn prices.

Full-fashioned hosiery prices for fall are unchanged as was predicted here some time past and there have been unimportant revisions in some seamless types but in general our previous statement no further price changes were due was correct. If these have not come by now they won't come with commodities trending higher. The outlook is for firm commodities which help manufacturers make money. Our previous statement that profits for the latter half of the year will be larger than for the first half and go a long way to offsetting early 1938 losses, stands more than ever on recent events.

Some in the trade have been concerned that manufacturers of all types of knit goods have not yet booked larger goods orders, and add the speculation in commodities and yarns cannot last. The answer to this is that all sound indicators point to a general improvement this fall which may surprise by its extent and this will sweep goods demand into more active brackets and take the recent yarn purchases and more too so that the primary buying to date may be called sound even though in advance of goods orders. Depletion of inventories alone made it legitimate.

ed that manufacturers who keep their machinery in good condition despite its age and produce high quality hosiery should be given an opportunity to build up a surplus so that they could eventually replace their worn out machinery with new equipment. This, Mr. Vogt said, would help stem the flow of new machinery and industries to the South.

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Union and Reading Mills Discuss New Contracts

Sharp criticism of the union's new wage policy has come from manufacturers in the Reading district. George B. Balmer, counsel for the Keystone Hosiery Manufacturers Association, representing fifteen Berks County mills, said "This cannot lead to anything other than complete chaos and disorder throughout the entire industry and a complete breakdown of price structure." These manufacturers asserted that the new attitude of the union is directly counter to the theory of the new wage and hour bill passed by Congress and signed by the President, which bill was actively supported by the union and by the manufacturers on the ground it would tend to wipe out wage differential. These statements did not mean that discussions with the union were at an end. It is believed that the Reading manufacturers under the new wage policy are somewhat apprehensive that the union may grant some Philadelphia mills wage rates which will make for keener competition for the Reading mills at the same time that it narrows the competitive difference between the North and the South. Some in the trade believe that the new tactics of the union really indicate it does not have great expectations of organizing the large part of the industry in the South in its new campaign agreed upon at its last national convention. Yet from time to time the union announces details of its drive in the South, in which it will have the active co-operation of the Textile Workers Organization Committee.

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Phila. Hosiery Mills Meet on Wage Pact

Following the announcement of the hosiery union that it would substitute individual agreements for the national contract, which has been in effect in the full-fashioned hosiery industry since 1928, conferences have been held this month between representatives of the Full-Fashioned Hosiery Manufacturers of America, Inc., and the union. Meetings are being held in view of the approaching termination of the national agreement between the union and the unionized section of the Northern branch of the industry and also in view of what has been termed the serious crises facing the hosiery industry in Philadelphia with the exodus of mills to the South and others liquidating. At one of these conferences it was pointed out during the last year 35 per cent of the hosiery made in this country during the last year came from the South. It was declared that the union realizes that the present form of contract has straight-jacketed northern manufacturers and that under the national contract, retailers knew each manufacturer's cost and therefore were in a position to dictate prices. It was also emphasized that lack of profit for most northern full-fashioned plants in recent years has prevented them from installing up-to-date equipment. Under the individual form of contract now being considered, each manufacturer's problems will influence his labor differentials, preventing publication of his costs and it is expected enabling him to invest in new machinery. This indicates that the hosiery union is now taking a strong stand in its effort to hold the remaining Philadelphia mills in their present location and prevent further removing to the South. While local manufacturers are optimistic the new policy will work out satisfactorily, there are many who assert this new policy should have been placed in effect years ago before so much of the industry was lost in the Philadelphia district.

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New Method for Using Short-Section Machines

Gotham Silk Hosiery Company's proposed solution of the short section knitting machine question is receiving attention from the manufacturers as well as the labor branch of the trade. The Gotham plan, arrived at after months of research is put forth as extremely simple. Briefly the plan is to take the old 18-section machines used in the full-fashioned hosiery industry and split them into 12 sections and 6 sections, then add 6 additional sections which can be coupled to the original parts, the result being a 24-section machine. It has been recognized that the 18-section machines were under a competitive handicap both from the point of production and cost. Such machines, it is pointed out by Gotham, are not only slow as they run at 50 to at the most 56 courses per minute as compared with 60 to 70 for the modern machines. In addition they operate at a higher labor cost because of the lessened number of sections, but at the same time the 18-section machines are capable of making a high quality product for which there is a demand.

With the new 24-section machines made in this manner, it is claimed that by the addition of parts such as shock absorbers, balancing cans, etc., the speed can be brought up to 60 courses per minute. This new method or invention has been held out as a hope for the survival of a number of Philadelphia hosiery mills that otherwise would have been forced out of business. The method was developed by B. R. Eckstein, manager of the Gotham Hosiery Mills, at M Street and Erie Avenue, Philadelphia, where it was tested for several weeks and found highly efficient and satisfactory. It is stated that by combining four obsolete machines into three, manufacture is speeded up so that 24 stockings are produced in 38 minutes. The old machines produced a total 18 stockings in 45 minutes. Although the immediate effect in such cases would be the elimination of one job in every four, the displaced workers will be reabsorbed in the rejuvenation of the industry which this invention will make possible, according to Emil Rieve, president of the American Federation of Hosiery Workers, who said he feels it will save a large percentage of the hosiery industry which has been migrating from the northeast section of Philadelphia. Eckstine has refused to patent the apparatus out of a desire to make this contribution without charge to Pennsylvania's hosiery industry. While the invention does not place obsolete machines on a par with modern equipment, it is hoped to narrow the disparity.

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Decision Reserved on Plea to Dismiss Apex Suit

Federal Judge William Kirkpatrick, at a hearing July 6, sought a way to hasten the trial of the $3,515,872 damage suit of Apex Hosiery Company against the American Federation of Hosiery Workers for damages to its plant during the seven weeks sit-down strike a year ago but the judge admitted he was in a quandry as to how he should conduct the trial. He said he was uncertain whether he should accord the company the full benefit of the far-reaching decision of the Federal Circuit Court of Appeals in June 1937, ordering the eviction of the sit-downers, or require the company to prove its case regardless of the sweep-

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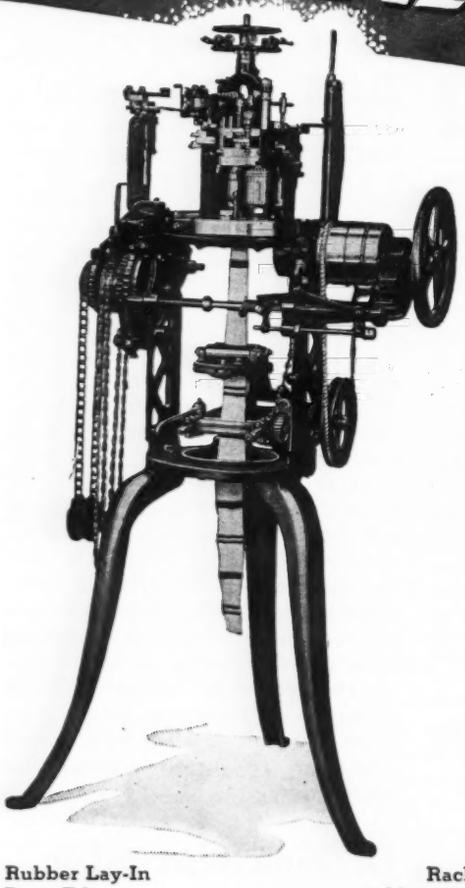

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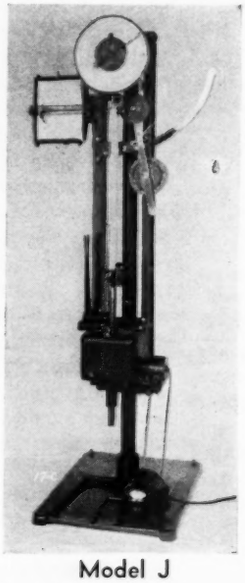

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ing victory the Circuit Court gave it in its injunction suit. He explained his dilemma was due to the latter order of the United States Supreme Court dismissing the injunction suit because it had been moot through a settlement being reached, in which Apex signed a union contract and he emphasized that the Supreme Court order reversed the Circuit Court dismissal of the entire case.

Judge Kirkpatrick originally dismissed the company's injunction suit in the District Court for eviction of the sit-downers on the ground their actions were not of the type contemplated by the Sherman law and the Federal Court had no jurisdiction in the case. He was later reversed by the Circuit Court in the precedent-making ruling that sit-down strikes which interfere with inter-state commerce are violations of the Sherman law and while the Supreme Court made no expression on this interpretation of the law, counsel for the union maintained that a reversal of the Circuit Court decision means it has been wiped off and Judge Kirkpatrick should disregard trial of the damage suit. Judge Kirkpatrick reserved decision and requested the attorneys to furnish him with all the information they could find on the effect of the Supreme Court's order for reversal of the Circuit Court injunction.

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Shipments of Hosiery Increase During May

The monthly bulletins published by the National Association of Hosiery Manufacturers said that for the first time this year, total monthly shipments of all types of hosiery were greater in May than for the corresponding month in 1937. Thus the 10,096,027 dozen pairs of hosiery of all types shipped in May 1938 were 3.5 per cent greater than the 9,758,687 dozen pairs shipped in May, 1937. As compared with 12 months ago, shipments of women's full-fashioned hosiery in May 1938 showed a gain of 8.8 per cent while shipments of women's seamless hosiery, excluding wool, showed a gain of 5 per cent because of a gain of 19 per cent in shipments of women's seamless silk hosiery. Men's half-hose, excluding wool, were 9.2 per cent above the level of a year ago due to an increased demand for cotton half-hose and there was a rise of 4.8 per cent in demand for anklets. Ribbed goods, however, are still moving slowly with shipments running 66.9 per cent below last year and the demand for woolen goods and children's and infants' goods is still considerably below that enjoyed at this time in 1937. Hosiery jobbers commented on the lively demand that they have experienced in recent weeks for women's seamless hosiery retailing from 25 to 50 cents a pair in both silk and rayon and confirmation of this is reflected in these statistics.

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Branded Full-Fashioned Prices Named for Fall

Quotations on branded full-fashioned hosiery for fall, which about live up to market expectations, have now been made. Several of these firms have announced practically unchanged prices throughout their list, while others have reduced quotations in some instances substantially on some of their higher-priced stockings. The situation on branded 51-gauge merchandise is particularly interesting in view of the sharp cuts made by one mill which is an important factor in this business. The new price will make it possible to retail a high quality branded 51-gauge stocking for $1.15. The base price of around $6.00 a dozen for 79-cent retailers has been continued by practically the entire branded market. Gotham Silk Hosiery Company, effective July 1, notified the trade that its $6.00 minimum would be unchanged for fall and aside from reducing a two-thread style to $11.75 a dozen and improving styles, the company made no changes. Other firms to announce unchanged minimums, were Kayser, Poenix, Holeproof, Brown Durrell, Davenport, and Northmont. Davenport took the radical step, however, in improving its $6.00 number, a three-thread, 42-gauge stocking, which is now being offered with an all-silk foot. The Kayser line also showed no important price change.

This firm started its lowest priced numbers at $6.00 per dozen with suggested retail price of 79 cents a pair, including at this price a three-thread, a four-thread and a seven-thread stocking as well as the Rolette number. The $1.00 retail range is priced as usual at $7.25, the $1.15 retail range at $8.25, and the $1.25 at $8.75 a dozen. Salesmen for the Berkshire Knitting Mills from all over the United States saw the fall and winter lines of stockings presented by Thomas O'Keefe, manager of the New York division at a two-day sales meeting of the firm, June 17 and 18th at the Wyomissing plant. Mr. O'Keefe reviewed style developments made by Berkshire while Rachael Smith, color stylist, discussed the current trend toward lighter shades. One feature was the announcement that every stocking turned out by the Berkshire is now of the ringless type.

J. M. Botts' 50th Anniversary in Trade

One hundred and fifty hosiery men and members of allied trades gave a testimonial dinner on June 29 at the Hotel Pennsylvania, New York, to John M. Botts, who has spent 50 years in the industry with one firm. It was a display of sincere friendship and affection for the senior partner of Harrington & Waring, New York, who has made a unique place for himself in the industry. Charles E. Felsing, divisional merchandise manager of the Allied Stores Corporation, acted as toastmaster and presented the guest of honor with a handsome scroll attesting the high regard in which he is held. Addresses were made by William H. Gosh, vice-president Nolde & Horst Co., Reading, Pa., and former president of the National Association of Hosiery Manufacturers; Harry Griffith, vice-president, Sibley, Lindsay and Kurr Co., Rochester, N. Y.; Fred Crawford, Hanes Associated Mills, New York, himself a 50-year man in the industry; Earle Constantine, president of the hosiery association, and William Meyer, president, Apex Hosiery Co., Philadelphia, and also a former president of the hosiery association. The scroll read in part as follows: "John M. Botts, 1888-1938. As a boy, in June, 1888, you entered the employ of Harrington & Waring. Today, as senior partner of this firm, you have spent 50 unbroken years with us and with the hosiery industry. In recognition of this unusual attainment, your friends in the industry tender you this testimonial dinner. We pay tribute to your high character, your originality and your integrity over this period of 50 years."

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Apex Hosiery Case Shifted from Phila.

The State Supreme Court, on July 5, granted a change of venue to the Apex Hosiery Co. so that its $1,171,000 damage suit against the County Commissioners, Mayor S. Davis Wilson, and Sheriff Hamilton can be tried outside of Philadelphia. The Supreme Court directed the suit be transferred to the Chester County Court of Common Pleas and designated President Judge W. Butler Windle of West Chester to preside. No date was set for the trial by the high court, that being left to the Chester County Court. Counsel for the hosiery company had claimed in arguments that the large number of friends possessed by Mayor Wilson and Sheriff Hamilton together with organized labor influence, made it impossible for

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the hosiery company to obtain a fair and impartial trial by jury in the Philadelphia courts. The Supreme Court order was made notwithstanding the fact that Court of Common Pleas No. 6 in Philadelphia is considering a reargument on whether or not the Mayor and Sheriff were properly brought into the suit as co-defendants with the county commissioners, the original defendants. The suit by Apex, not to be confused with its other suit for triple damages against the hosiery union, was brought as a result of damage to the company's property during the sit-down there last year.

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Survey Discloses Drop in Price of Silk Hosiery

The average retail price for women's all-silk hosiery for the period from 1923-1928 was $1.51 a pair, and for the period 1933-1938 it was 91 cents a pair, according to a survey issued by Sears, Roebuck & Co. The survey used the company's catalog prices for the periods covered and price changes in 60 important items were covered in the survey. The high price on silk hosiery for the period, $1.98 was reached in the fall of 1923 and the fall of 1924. The low of 89 cents was quoted in the spring and fall of 1933, spring and fall of 1935, fall of 1936, spring of 1937 and 1938. The survey points out there has been a decrease of 16 cents per pair in the margin of processing. The processing cost decreased from 66 cents a pair in the first period to 50 cents a pair in the second period. This decrease is accounted for by the improvement of knitting machines, giving them increased speed. For instance, one man now produces eight dozen pairs as against six dozen pairs during the period of 1923-31. A second factor accounting for this lower cost is a reduction of wage rates.

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Hosiery Union and Phila. Mill Sign New Contract

On July 15 the Full-Fashioned Hosiery Manufacturers of America, Inc., composed of 58 mills in Philadelphia and the Middle West said to represent about 27 per cent of the productive capacity of the industry, signed a new contract. It will last for three years and contains no basic wage change from the old contract which expires August 31. The new contract is unique in that it makes it possible for the union to grant wage concessions in individual mills where this is decided to be a necessary step to save a mill in this association. It marks a new high in co-operation between the union and this mill group. Strikes are to be forbidden for the period and the pact sets up arbitration machinery; wages can be changed during the period by application of one side and upon agreement between the two parties. If no agreement is reached then arbitration machinery is set up. Competition from the South is back of the new set-up and it is hoped to stop the migration of mills in Philadelphia and also to permit these plants to put in new equipment through union co-operation in the matter of wages.

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Proposed Trade Rules Issued for Knit Underwear

Proposed trade practice rules for the infants' and children's knitted outerwear industry were made public by the Federal Trade Commission July 8. The rules are the outcome of a trade practice conference held on March 21, at which members of the industry submitted a set of proposed rules to the commission. Except for some modification, the commission has tentatively approved these rules and has proclaimed the usual period of grace until July 26. In addition to receiving written complaints, an opportunity for oral hearing will be provided on July 26 and final consideration of the rules will proceed after that date. The annual volume of sales in this branch of the knit goods industry is estimated at approximately $9,000,000 on a capitalization said to be in the neighborhood of $5,000,000. The commission pointed out these rules do not relieve any member of the industry of the necessity of complying with fiber identification rules insofar as such rules are applicable to the products of this industry.

Considered as unfair trade practices are the making of false statements concerning the quality of products in rule No. 1; misrepresentation of business as manufacture in rule No. 2; the limitation of competitor trademarks and labels in rule No. 3; rule No. 4 concerns itself with prohibitive discriminatory prices or rebates and forbids the granting of price differentials that effect a discrimination between different purchasers of goods of like grade and quality and where the effect may be substantially to lessen competition or create a monopoly or to prevent competition with any person who grants or receives the benefit of such discrimination.

Wage Act Effect

In its study of the new Federal Wage Act for the hosiery industry, the National Association of Hosiery Manufacturers points that the industry is, with few exceptions, "and has been since the code period operating on a work-week of 40 hours. The fixed minimum wage of 25 cents per hour or $10.00 per week, will affect the full-fashioned branch of the industry only in rare instances. In the seamless branch a number of plants will be affected in some degree but the percentage of the total seamless employees receiving less than $10,000 for a 40-hour week is not large."

The association also points out in its statement, the provision of the act most generally misunderstood, namely that under which the 40-cent minimum can be put into effect any time after 120 days from the effective date of the law, regardless of the fixed minimum of 25 and 30 cents per hour as set in the law. Also the bulletin notes the chance of classifications in the law by which differentials could be set for different parts of the same industry. In conclusion the statement says "It is apparent from the new angles discussed above, and there are many others, that the hosiery industry must continue the fine co-operation it has displayed in recent years; must act as a unit for its general welfare; must give support to its National Association; must be prepared to supply promptly the necessary facts and figures which will enable the association acting as its spokesman to represent it before the administrator or the hosiery industry committee."

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Berkshire Mills Grant Annual Wage

Berkshire Knitting Mills has entered into an agreement with the skilled knitters of the company whereby they are guaranteed 50 weeks of work a year on a schedule of minimum wages for different classifications of work, plus premiums. The agreement provides that each employee covered by this annual wage contract is to produce, over a period of four weeks, not less than 90 per cent of the average plant production volume for a given classification of work or design. Each employee is allowed a latitude of 10 per cent in production volume without penalty. Should production of an employee fall below the 90 per cent in the four week period, the company may deduct from his weekly salary a proportionate amount to differentiate between actual production and the 90 per cent agreed upon.

TRENDS—THE YARN MARKETS

Early June Saw Sudden and Drastic Change in Cotton and Silk Yarns with Rapid Price Increases. Rayon Yarn Demand Improves. Worsted Yarns Slow to Follow Raw Wool

Philadelphia, July 16, 1938

SHARP ADVANCES in prices of silk and cotton featured the yarn markets over the last few weeks, the advance getting under way without warning late in June and in about three weeks silk had climbed more than 30 cents and cotton almost a cent. This in turn coming with an improvement in business sentiment generally brought about a heavy coverage both in cotton and silk yarns on the scale up, with the trade now having a good average price in about half the cases. Some hosiery plants did not begin to cover until the advance had got well under way and more has to be bought for fall goods. Cotton yarn spinners are trying and making nice headway in bringing yarns back to a profitable level. Worsted yarns have not fully reflected the advance in wool nor wool top futures but are slightly harder although demand is slow to improve. Rayon yarns are in more active demand, recent sales taking about current production.

Cotton Yarns

Several counts of cotton yarns are quoted at prices 4 cents higher than they sold at at the 1938 low not many weeks ago. The average advance has been between 1½ and 2 cents per pound, indicating that spinners have been able to increase prices somewhat faster than the raw material has gone up in the same time. This has been due to the fact that previously yarns had been selling at prices that spinners claim represented losses of approximately 2 cents per pound and it was natural that they would take advantage of the first opportunity of putting them back on a more profitable basis. This opportunity came late in June and the market continued in a very active and advancing state for about nine days, after which trading assumed a more conservative pattern and prices showed less inclination to advance, although they continued very strong. Examples of this may be seen from 20s two-ply, which a month ago sold at 19½ cents and early in July spinners of the same yarn reported that they had sold at 21½ cents with quotations from other sources on the same size being up to 22 cents and over.

This count sold at 19 cents as the low for this year and from that point to recent quotations there has been an upturn of 2 to 3 cents which has been somewhat larger than the average. There has been a good demand for yarns, particularly late in June and the first few days of July when more yarn was sold in this short period than in any similar time for more than a year. Most of the buying has been of a protective nature as manufacturers in most instances have not begun to sell their own goods in much larger quantity although this is not far off, manufacturers reporting that inquiries have showed a marked improvement over the last few weeks. There has been considerable coverage of short positions accounting for a part of the new business placed; in other instances manufacturers have bought because they felt yarns were a bargain at former low levels.

The third source from which heavy purchasing has come has been in the contracting by large mercerizers who have placed orders in two-ply combed yarn for delivery over the balance of this year. The mercerizers began to buy at prices very close to the bottom of the market this year and have been placing additional contracts on the way up, giving them an attractive average cost for the fall season.

Silk

Silk has staged one of its most remarkable upturns in so short a period in the last few weeks and early in July the market had reached a level between 25 and 30 cents higher than it was the middle of June. The advance came so quickly that relatively few hosiery manufacturers were able to cover extensively at the lowest price but when the market began to strengthen, activity increased and it is reported in the trade that more than half of the manufacturers have a pretty good average in view of the advance that has taken place. At the same time, it is realized that there is a large volume of silk yet to be bought by the knitting industries for the fall season. While there are many who are refusing to place additional orders, feeling that the market is not apt to go much higher, there are others who feel that in view of the large amount of silk yet to be bought, there is a good chance of the raw market working up to the $2.00 level or higher.

Deliveries of all sorts of raw silk to American mills during June rose to 31,492 bales or about 2,000 bales higher than estimates and 2,805 bales higher than takings in May compared with the same month last year, consumption in June was 4,291 bales less. Since imports were larger than mill takings in the month, local stocks rose 7,441 bales to a total of 44,457 bales at the end of the month but they were 1,109 bales under a year ago. Japanese silk in transit at the end of June was only 22,700 bales, a slump of 12,100 under the previous month and 1,000 bales less than was on the way a year ago. There is evidence that the beginning of the upward movement in silk originated in Japan but the movement gained momentum when after each successive advance, more American manufacturers stepped into the market in both the hosiery and the weaving trades.

Rayon

There has been a decided spurt in demand for rayon yarns in the past two weeks with some of the larger producers reporting that sales have been as much as 25 per cent above those a month previous. Shipments of knitting yarns in June were between 2 and 5 per cent larger than those for May, which in turn was a fairly good month for sellers of knitting yarns. This improvement has become more marked in July and indications now are sales and shipments for the present month will be the largest of any month this year. Improved demand is reported as general and not concentrated on any one count or any particular luster, some producers feeling that the broadening of demand indicates the beginning of real fall business. Curtailment in the rayon industry reduced yarn stocks in producers' hands by the middle of this month and if the new business volume continues, by the end of July stocks will be in such a position that producers will be enabled to increase their production rates. The accumulation of these stocks in producers' hands was the reason why rayon yarn prices did not advance when the upturn in silk and cotton got under way.

Worsted Yarns

Worsted knitting yarn prices were belatedly advanced 5 cents per pound July 12 by leading spinners being several weeks late in view of the previous strength in wool and tops. Spinners at the time confined the advances to medium grades saying that finer wools and yarns made therefrom had not been active yet and also that competition in these was keener. Demand for worsted yarns has been slowly expanding and on the price advance there was a fair volume of fall coverage to be shipped over the next two to three months. Spinners did not take business further ahead because they demanded shipping instructions at the time the orders were placed which means that in the next few weeks shipments will be larger and spinners' operations will start upward. Sentiment is much brighter than a month back although wool and its products have been slower than other textiles to improve.

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"HURRICANE" DRYERS reduce labor and operating costs to the minimum, by introducing such engineering features as Aero-Therm system of recirculating heated air; lowest possible steam consumption; much faster drying speeds; reduced floor space; lower up-keep costs.

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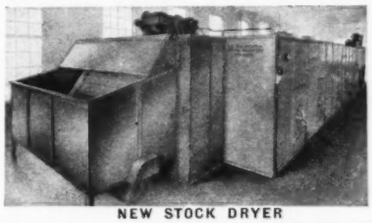

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Why not let us conduct TESTS in your plant, without obligation or cost to you? It will Prove just what You can SAVE.

ALSO NEW Hi-Speed LOOP Dryers
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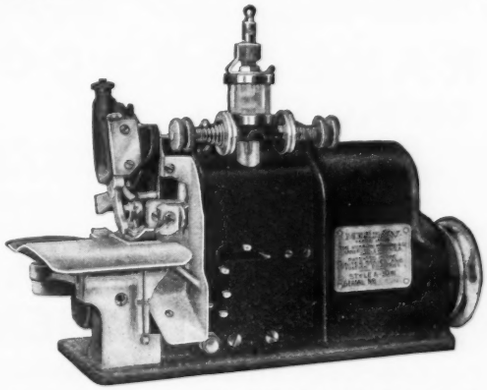
For Overseaming and Overedging with maximum efficiency at high speed and low operating cost modernize with the new

MERROW CLASS A MACHINES



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HYDROXY SIZES
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HYDROXY Sizes are absolutely uniform and dependable, being made under strict laboratory control.
—Cost no more than making your own.
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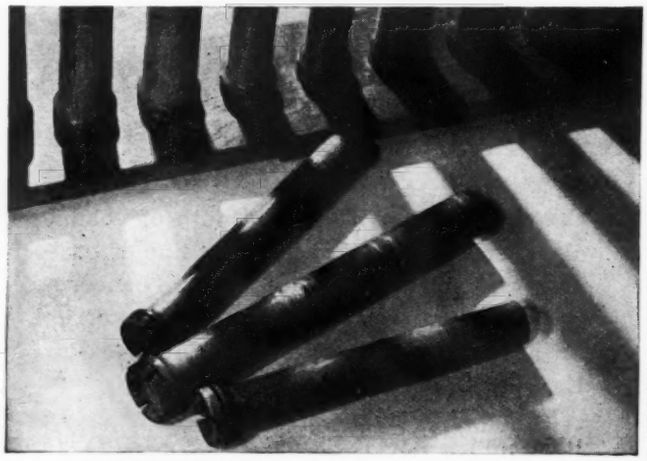

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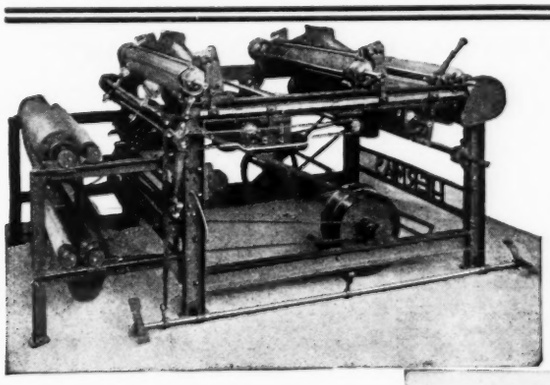

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. . . . by using the latest improved types of clothroom equipment of which these three machines are typical. Send us a roll of your cloth for a demonstration.

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Horizontal Shear; greatly improved automatic. May be used with present brushing and rolling equipment.

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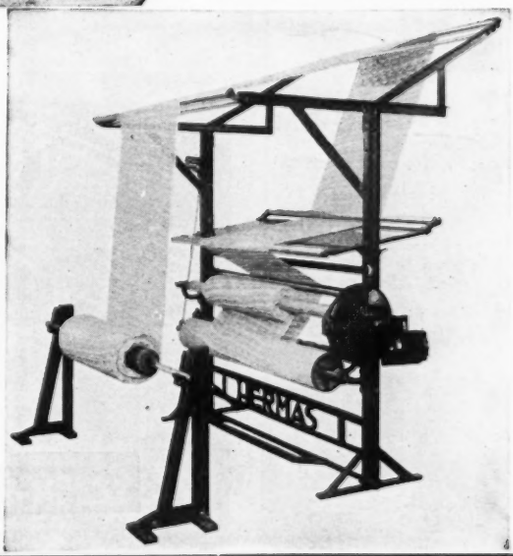
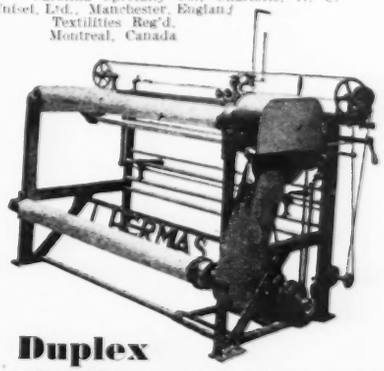
Many mills are saving hundreds of dollars a month through the use of the above machines and are securing better quality fabrics.





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Permits continuous operation of shear or other machine. Cloth is fed from one roll into a second machine while another roll is being built up.

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They're Lightweight and Easy-to-use

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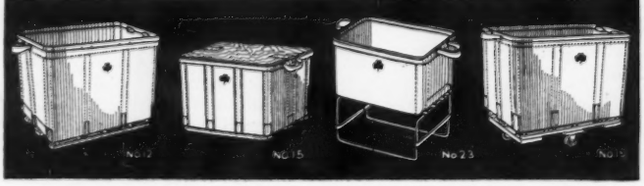

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600 outside rooms, each with bath . . . cool terrace dining in warm weather . . . convenient parking and garage accommodations . . . popular prices throughout.

Rates from $3

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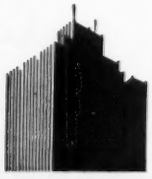

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Long life, uniform sizing, efficient operation and low cost.

Other Albany products include Slasher Jackets, Slasher Discs, Endless Clearers, Printers Lappings and Blankets, Palmer and Sanforizing Blankets.

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(Pronounced "SI-CO")

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"A company is known by the customers it keeps"

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"They ran without any trouble even tho' started in the worst of dog days."

If you need to replace worn rings to put your twisters and frames in top-production shape, don't wait on the weather. DIAMOND FINISH high-polish rings are started by numerous mills each summer with entirely satisfactory results. (Above is actual quotation from a customer.)

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is a new book telling how others meet many seamless problems.

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COTTON, Grant Bldg., ATLANTA, GA.

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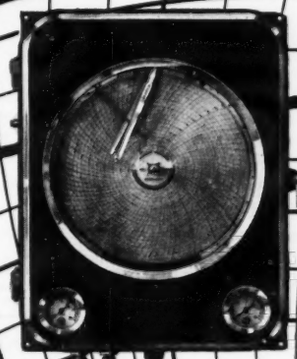

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The Record-O-Stat is valuable wherever close control of temperature is important and where, also, a record of the control performance is desired. The temperature control range can be anywhere from 40 degrees below zero to 1000 degrees Fahrenheit. Standard charts are available for all temperature ranges.

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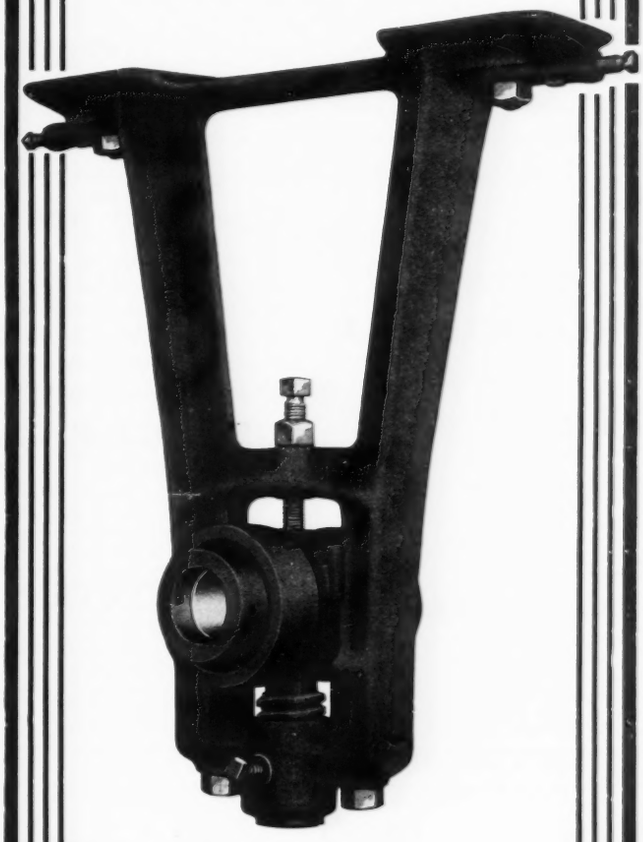

DROP HANGERS
POST HANGERS
PILLOW BLOCKS
LOOSE PULLEYS
and
SPECIAL APPLICATIONS

We have patterns for, and can furnish Ball Bearing Boxes to fit *any make and style* of Hanger Frame.

GOLDENS' FOUNDRY & MACHINE CO.
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Specializing in Textile Machinery for Relocation

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Hollerith or Powers tabulating machines, payroll, accounting, general detail, etc.—Age 36—Excellent references, thorough mill training. Last employer liquidated. With previous company 16 years. Will accept other suitable employment, anywhere, immediately. Write J. C. Box 425, Lawrence, Mass.

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Overseer of Weaving

We want a high-class overseer of weaving for mill with 60-inch Draper looms with C. & K. dobbies, and some C. & K. box looms with dobbies, on diversified products. Send applications with full details of experience to Box 453, care COTTON, Grant Bldg., Atlanta, Ga.

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To Be Sold On the Premises

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Card Room Equipment: 44 sections, 5 and 6 delivery each, 1⅜" roll 12" coiler Whitin drawing frames; 14 Woonsocket and Providence 12x6 slubbers; 18 Whitin and Providence 10x5 and 9x4½ slubbers; 20 Whitin and Providence 8x4 speeders.

Spinning: 26,688 spindles; 145 Whitin 216 to 264 spindle spinning frames, 3, 3¼, 3½ in. gauge, 1⅜, 1¾, 1⅞ in. ring.

Twisters: 14 Whitin 5½" ga. twisters, tape drive; New England 30 head braider.

Draper Looms: 650 Modified "D" and "E" motor-driven 52, 60 and 64 in. looms; 485 modified "D" and Model E belt-driven 48 to 72 in. looms; 247 Model E belt-driven 46 in. looms.

2 Barber Colman 6E and 7E warp tying-in machines: Barber Colman 3-SS warp drawing-in machine; 5 Curtis-Marble 62 to 76" railway sewing machines; 3 Woonsocket 80", 24 and 36 roll double acting nappers; 2 Woonsocket 90" 22 roll felters.

Inspection and Cloth Machines: 27 Curtis & Marble 66 to 102" inspection tables; C. & M. 57" vertical brushing machine; 66" brusher and beater, brushing and shearing machine; 60" shear; 76" napped goods shear; 76" rolling and measuring machine; 3 44" steam calender and rolling machines; Alexander & Garsed 66" brushing machine.

Dye House: Butterworth Textile Water mangles; 2 Butterworth Textile 72 and 78" straight away and swing tenter frames; 3 B. T. dry can units; Morton beam dyeing machine; Morton raw stock dyeing machine; 3 Sargent and Cyclone raw stock dryers with 70 and 97" hopper feeders; Butterworth 64" 5-comp. dyeing machine.

Electric Motors: 800 A. C. electric motors, ½ to 150 H. P., 220 and 550 volts.

Miscellaneous: 700,000 spools, quills and bobbins; 150 American sectional humidifiers; chain hoists, dial scales, reels, Foster tensions, heddle frames, reeds, roving cans, spinning rings, beams, machine shop equipment, mill supplies, machine parts, office furniture, adding machines, calculators, typewriters, safe cabinets, etc.

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80 Federal Street, Boston **27 William Street, New York**

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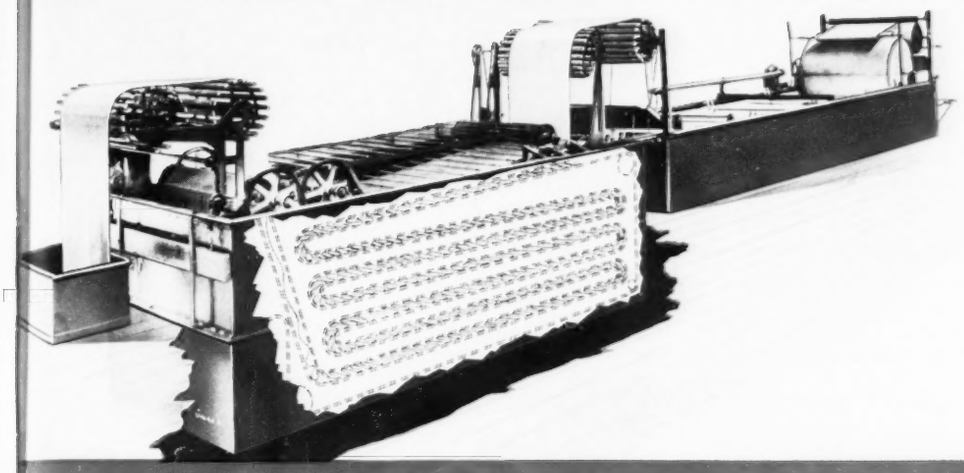

LOOSE-FORM, CONTINUOUS, FULL-WIDTH, CONVEYOR-TYPE MACHINE

for open-width boil-off, scouring, chemicing and all other operations which require time process.

Desirable for rayon, acetate, silk, cotton and mixtures. It is the only full-width machine for boiling off silk that conveys the goods during boil-off operation, eliminating hand work. With variable speed, up to 460 yards can be submerged at one time, continuously and progressively. No cloth strain. Permits more shrinkage than on any other type of handling.

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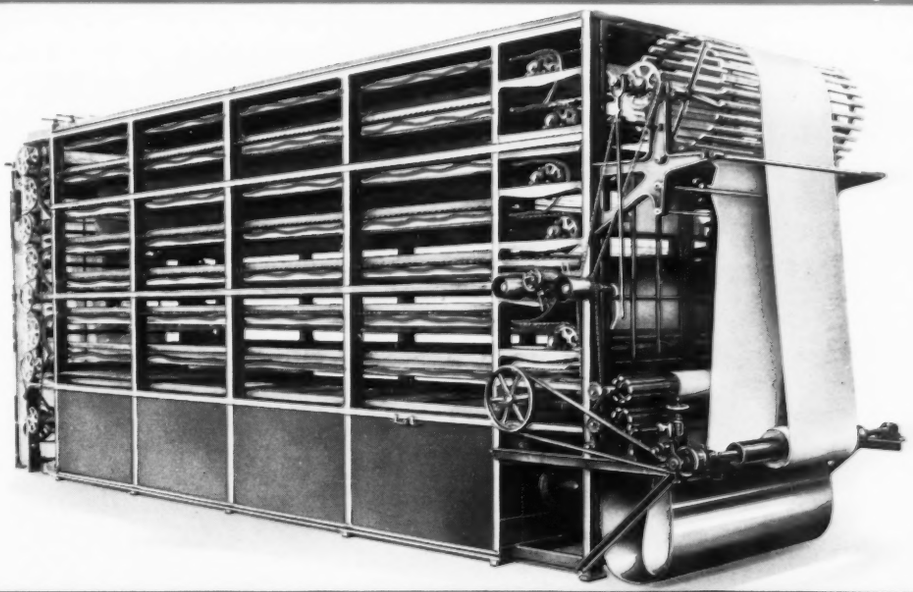
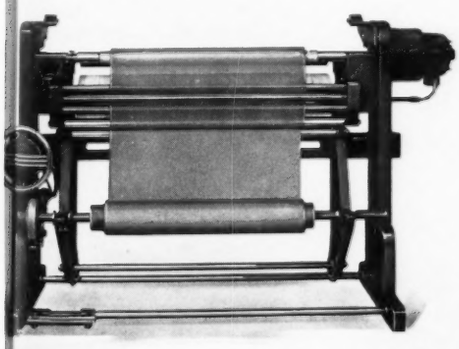
This machine allows full, natural shrinkage because the horizontal conveyors carry the cloth in loose form. Higher speeds and temperatures are possible, which materially increase production.

Even drying of all cloths — cotton rayon, acetates, silk and mixtures — is simply and easily done by the average operator. This machine is particularly valuable for resin finishing.





← TENSIONLESS TUBER

On this machine broadgoods are quickly and easily packaged without wrinkles, stretch or uneven selvedges. Van Vlaanderen has perfected accurate measuring of yardage for your and your customers' satisfaction. Roller bearings throughout. Dynamically controlled brakes give instant operator control even at highest speeds.

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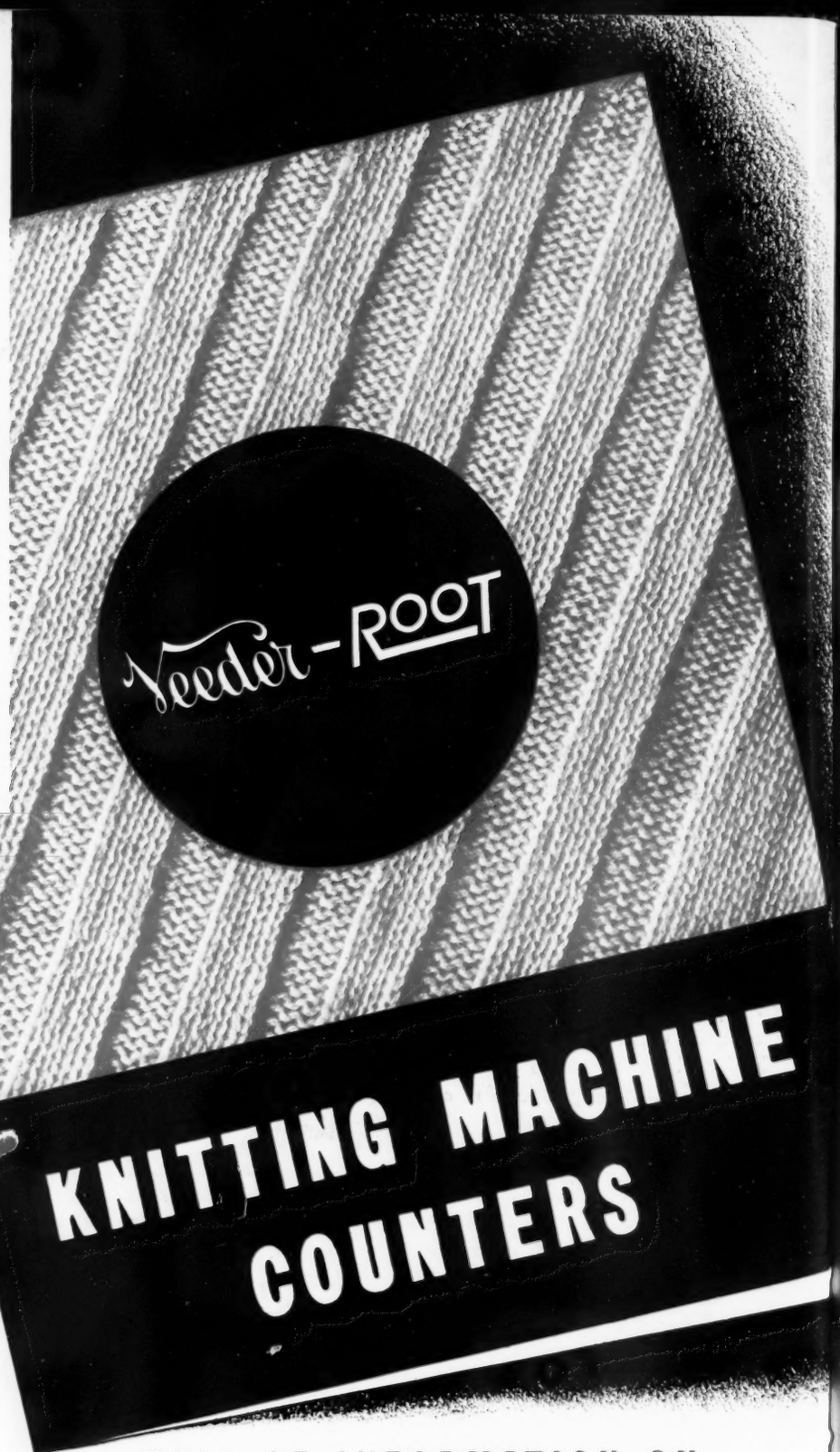

KNITTING MACHINE COUNTERS

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